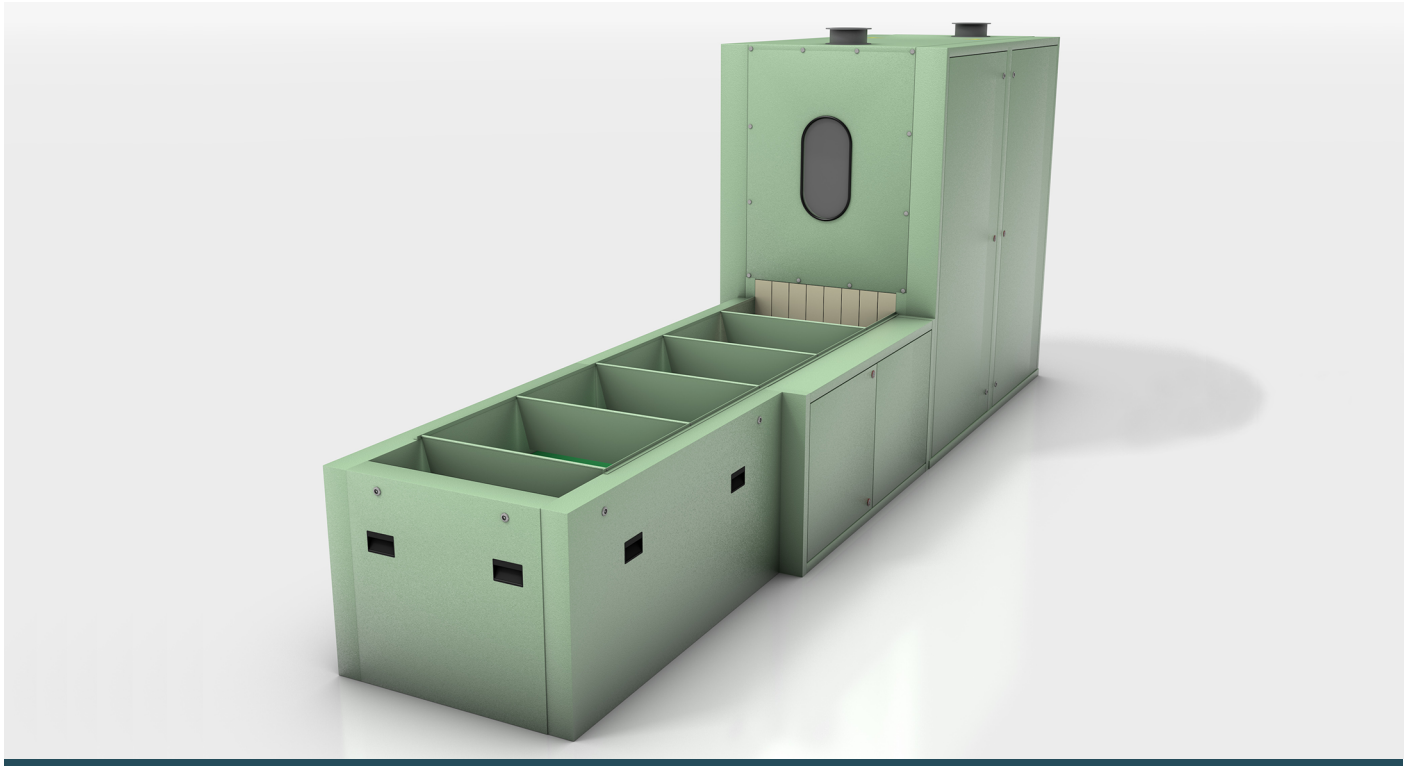
RIETER



Operation Manual

Waste Opener B 25

40023351

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Imprint

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1 Introduction

This chapter contains information about the work with the operation manual.

1.1 About the Operation Manual

The operation manual is a part of the machine and is to be kept at the machine. The instructions from the third-party suppliers are also to be kept at the machine.

The operation manual is identified by the material number and the revision number. These identification properties are specified in the legal notice.

1.2 Availability of the Operation Manual

The machine owner must make sure that the personnel read and obey the operation manual. The machine owner must make sure that the personnel that do the work always have easy and fast access to the operation manual.

1.3 Conventions Used

The writing conventions that are used are as follows:

Writing Convention		
Name	**Example**	**Description**
Section information	Chapter 1, 1.1, 1.1.1	The chapter numbers are given in a sequence. The chapter numbering starts with the number 1.
Figure number	*Figure 1*	The figure numbers are given in a sequence. The figure numbering starts with the number 1.
Callout	1	The elements in the figure are identified with position numbers.
Prerequisite	✓	The given requirements are to be obeyed before the work or the operation starts.
Reference	▶	The reference to a different chapter or information is given.

Writing Convention		
Name	**Example**	**Description**
Intermediate result		The intermediate result is the reaction of the machine or the assembly that occurs after a work step. The machine or the assembly is in a specified condition.
Instruction in a safety message		The symbol starts the safety instruction in the safety message.

1.4 Intended User

Only Rieter-approved personnel are permitted to operate the machine, do the maintenance work, and the repair work at the machine. The personnel must know the contents of this operation manual and how to find the related information.

The table contains information about the skills of the different personnel that do the work at the machine.

Personnel	Description	Skills / Requirements
Mill manager, textile technologist	The mill manager or the textile technologist: – Monitors the quality of the product – Does the managment and monitors the production procedure – Monitors the machine efficiency	The mill manager or the textile technologist completed the training as a textile engineer.

Personnel	Description	Skills / Requirements
Installation personnel	The installation personnel install the machine and the machine components. The installation personnel: – Are responsible to install all machine components correctly – Give instructions to the auxiliary personnel – Give instructions to the electrician – Do all function tests that are necessary for the commissioning of the machine – Do the commissioning and puts the machine into operation after the machine is installed	The installation personnel: – Are Rieter-approved persons and employees of Rieter – Did the training courses supplied by Rieter – Know all safety regulations that are necessary to install the machine and the machine components
Shift supervisor	The shift supervisor: – Does the commissioning and the changeover of the machine – Adjusts parameters – Monitors the machine efficiency – Does the troubleshooting	The shift supervisor: – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to put the machine and the machine components into operation – Is a person with a training as a technician
Laboratory personnel	The laboratory personnel: – Monitor the quality of the product – Adjust parameters	The laboratory personnel: – Did the training courses supplied by Rieter – Are persons with a training as a textile engineer or laboratory technician

Personnel	Description	Skills / Requirements
Operator	The operator: – Supplies the material to the machine – Removes the material from the machine – Prevents the standstill of the machine because of not sufficient material, cans, or tubes – Does the daily cleaning work	The operator: – Did the training courses supplied by Rieter or the shift supervisor – Knows all safety regulations that are necessary to operate the machine and the machine components
Electrician	The electrician: – Installs the current and the voltage supply at the machine – Does the inspection work of the electrical components and the components of the safety circuit – Does the electrical repair work – Does the troubleshooting	The electrician: – Is a person with a training as an electrician, an electronics engineer, or a mechatronics engineer – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to do the repair work and the maintenance work at the machine and the machine components
Mechanic	The mechanic: – Does the mechanical inspection work of the machine and the components – Does the mechanical repair work – Does the troubleshooting	The mechanic: – Is a person with a training as a mechanic – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to do the repair work and the maintenance work at the machine and the machine components

Personnel	Description	Skills / Requirements
Maintenance personnel	The maintenance personnel: – Clean the machine and the machine components – Do the lubrication of the machine	The maintenance personnel: – Did the training courses supplied by Rieter and the shift supervisor – Knows all safety regulations that are necessary to do the maintenance work at the machine and the machine components

1.5 Liability

If the assembly of new or existing facilities is done by a third party that is against regulations, Maschinenfabrik Rieter AG (called Rieter) does not accept liability.

The auxiliary agents supplied by Rieter such as cranes, caster jacks, etc. are to be used only in the area and for the intended types of machine and for no other purpose. Rieter does not accept responsibility for damage because of inappropriate usage of the auxiliary agents.

If the machine is used for a purpose other than the intended purpose, Rieter does not accept liability.

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2 Safety

This chapter contains information about:

- The general safety information
- The intended users
- The location of the safety labels
- The safety equipment
- The danger zones

2.1 General Safety Information

This chapter contains information about the safety of the machine.

All personnel that do work at the machine must know and obey the safety instructions.

This machine has state-of-the-art technology and gives a high degree of operational safety.

The standards and directives applied during design, production, and configuration are recorded in the EC/EU Declaration of Conformity and the manufacturer's declaration.

Also, the national safety regulations, the mill safety regulations, and the applicable accident prevention regulations are to be obeyed.

Failure to Obey Safety Instructions

Rieter is not liable for damage that is caused if the safety instructions are not obeyed, specially damage that is caused because of:

- The machine is used for different purposes than the machine is made for.
- Incorrect operation
- Incorrect selection of materials and tools
- Not sufficient or missing maintenance work and repair work

2.1.1 General Safety Information

This machine has a state-of-the-art technology and supplies a high standard of operational reliability.

The standards and directives applied during design, production, and configuration are listed in the EC/EU Declaration of Conformity and the manufacturer's declaration. Obey the national safety regulations applicable in the country where the machinery is operated, as well as the mill safety regulations and the accident prevention regulations!

2.1.2 General Safety Instructions

The general safety instructions that follow are to be obeyed:

1. Give the machine key and the password only to approved personnel.
2. Only approved personnel are permitted to operate the machine.
3. Operate the machine only in a damage-free condition.
4. Stop the machine to change, install, remove, do maintenance work on, or to repair the machine or machine components.
5. Set the main switch to the position OFF. Padlock the main switch.
6. Keep the machine floor, the platforms, and the operating platforms clean of grease, oil, and other fluids.
7. Do not go onto the machine.
8. Always put on personal protective equipment.
9. Put away long hair.
10. Do not put on:
   - Finger rings
   - Wristwatches
   - Scarves
   - Loose clothes

Safety Devices and Monitoring Devices

Only approved personnel are permitted to remove the safety devices and the monitoring devices. Before the devices are replaced, the approved personnel must make sure that the main switch is set to the position OFF, the main switch is padlocked, and the power supply is disconnected. Modifications that are not approved can cause death, injury, or property damage.

The instructions that follow are to be obeyed:

1. Do not make the safety devices short-circuit.
2. Replace defective safety devices of the safety circuit by original safety devices and with the full work unit only.
3. Only Rieter-approved personnel are permitted to assemble the machine.
4. Examine the correct function of the safety devices before the machine starts to operate, after commissioning, and when safety devices were replaced.
5. *Safety Circuit and Safe Torque Off (STO)* ▸ *22*

External Transport System

The safety requirements for an external transport system are to be obeyed by the operating company.

The operating company must make sure that the warning signs, the mandatory signs, and the prohibition signs are possible to be read.

2.1.3 Non-Observance of Safety Regulations

Rieter has no responsibility for the damage that is caused by the non-observance of this operation manual.

No responsibility of Rieter applies to the damage because of:

- A purpose other than the machine is made for
- Incorrect operation
- Incorrect selection of materials for workpieces and tools
- Not sufficient or missing maintenance work and repair work

2.1.4 Safety Devices and Monitoring Devices

Only approved personnel are permitted to remove the safety devices and the monitoring devices. Before the devices are replaced, the approved personnel must make sure that the machine is stopped and the power supply is disconnected. Modifications that are not approved can cause death, injury, or property damage. Obey the instructions that follow:

- Do not make the safety devices short-circuit.
- Do not do modifications that are not approved or assemble the machine again without an approval.

2.2 Safety Messages

The safety messages have 4 different signal words that refer to the severity level.

DANGER

If these safety instructions are NOT obeyed, the situation causes death or severe injuries.

WARNING

If these safety instructions are NOT obeyed, the situation can cause death or severe injuries.

CAUTION

If these safety instructions are NOT obeyed, the situation can cause minor injuries.

NOTICE

This message shows that the user must obey the given instructions to prevent property damage.

Structure of the Safety Messages

Each safety message contains these elements:

- Safety alert symbol
- Signal word
- Type and source of the hazard
- Consequences if the dangerous situation is not prevented
- Instructions on how to prevent the dangerous situation
- 1 more warning symbol, mandatory symbol, or prohibition symbol can make clear the safety text

2.3 General Safety Instructions

The general safety instructions that follow are to be obeyed:

1. Give the machine key and the password only to approved personnel.
2. Only approved personnel are permitted to operate the machine.
3. Operate the machine only in a damage-free condition.
4. Stop the machine to change, install, remove, do maintenance work on, or to repair the machine or machine components.
5. Set the main switch to the position OFF. Padlock the main switch.
6. Keep the machine floor, the platforms, and the operating platforms clean of grease, oil, and other fluids.
7. Do not go onto the machine.
8. Always put on personal protective equipment.
9. Put away long hair.
10. Do not put on:
    - Finger rings
    - Wristwatches
    - Scarves
    - Loose clothes

Safety Devices and Monitoring Devices

Only approved personnel are permitted to remove the safety devices and the monitoring devices. Before the devices are replaced, the approved personnel must make sure that the main switch is set to the position OFF, the main switch is padlocked, and the power supply is disconnected. Modifications that are not approved can cause death, injury, or property damage.

The instructions that follow are to be obeyed:

1. Do not make the safety devices short-circuit.
2. Replace defective safety devices of the safety circuit by original safety devices and with the full work unit only.
3. Only Rieter-approved personnel are permitted to assemble the machine.
4. Examine the correct function of the safety devices before the machine starts to operate, after commissioning, and when safety devices were replaced.
5. *Safety Circuit and Safe Torque Off (STO)* ▸ *22*

External Transport System

The safety requirements for an external transport system are to be obeyed by the operating company.

The operating company must make sure that the warning signs, the mandatory signs, and the prohibition signs are possible to be read.

2.4 Emergency Report

A report of the accident must be as follows:

- Who makes the call?
- What occurred?
- What is the type of injury?
- When?
- Where?
- How many persons have an injury?
- Are there other dangers?

If an accident occurs:

1. Give first-aid treatment.
2. Make a call to the local emergency center.
3. Give information about the accident to Rieter.

2.5 Personal Protective Equipment

The personal protective equipment that follows is to be used:

Symbol	Information
	Safety helmet Use a safety helmet to prevent head injuries. Refer to the EN 397:2012+A1:2012 standard.
	Eye protection Use eye protection to give protection to the eyes from particles that occur during work at the machine. Refer to the EN ISO 166 standard.
	Ear protection Use ear protection to give protection to ears from high-volume noise. Refer to the EN 352 standard.
	Respiratory protection Use respiratory protection to give protection to the respiratory tract from dust. Refer to the EN 149:2001+A1:2009 standard.
	Safety gloves Use cut-resistant safety gloves that have a flexible, impact-resistant layer to give protection to hands from cut injuries. Refer to the standard EN 388:2016. Use chemical-resistant safety gloves to give protection to hands from injuries by chemical materials. Refer to the EN 374 standard. Use heat-resistant safety gloves to give protection to hands from burns. Refer to the EN ISO 407 standard.
	Safety shoes Use safety shoes to give protection to feet from injuries and personnel from electric shocks. Refer to the EN ISO 20345 standard (category S3).

2.6 Preventing Damage of Electronic Components

Electronic components are sensitive to electrostatic charges.

1. Release the electrostatic charge on grounded metal parts before contact with electronic components. Use a grounding wristband.
2. Touch electronic components only if necessary.

Figure 1: Electronic components

3. Do not touch the pins or parts of the printed circuit board of electronic components.

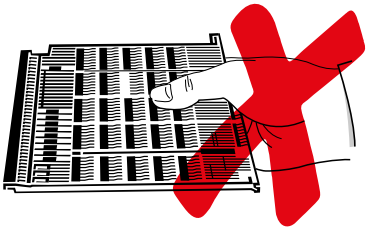


Figure 2: Pins or tracks of electronic components

4. Do not let electronic components touch objects that have an electrostatic charge (for example, synthetic materials).

Figure 3: Electronic components and electrostatically chargeable objects

5. Do not keep electronic components near computer screens. Keep a distance of a minimum of 10 cm between an electronic component and the computer screen.

Figure 4: Electronic components near computer screens

2.7 Fire Protection

Fires can occur during the processing of textile materials.

Fires can occur because of:

- Smoking
- Contact of the fiber material with hot surfaces as, for example, hot bearings
- Fiber material gets in contact with sparks that occur during the grinding of metals or because of a short circuit, for example metal parts in the cotton bale.

The personnel must know how to operate the manually operated extinguishing systems to extinguish fires.

The instruction of the personnel about the extinguishing systems and about the escape procedures is necessary.

The standards of the local fire protection authorities are to be obeyed to operate the fire extinguishing systems.

To prevent the explosion of trash particles, dust, and fibers:

- An air circulation system is to be specially installed in the areas of fiber operation.
- The pipe system that moves the fibers is to be grounded.
- Dust and fibers are to be removed regularly.
- A vacuum cleaner is to be used.

2.8 Safety Circuit and Safe Torque Off (STO)

The safety circuit has sensors, operating elements, and actuators.

The safety circuit is used to give protection to the personnel, the environment, and the equipment.

The electrical documentation contains the information about the safety circuit connections.

The safety devices of the safety circuit are as follows:

- Emergency stop buttons
- Safety limit switches at the doors and the hoods
- Safety relays
- Frequency converters and control systems of stepper motors with integrated functional safety

Safety Functions of the Frequency Converters and the Control Systems of the Stepper Motors

Safety Function Abbreviation	Safety Function
STO	Safe Torque Off
SOS	Safe Operating Stop
SBC	Safe Brake Control

Safety Function Abbreviation	Safety Function
SS1	Safe Stop 1
SS2	Safe Stop 2
SSM	Safe Speed Monitor
SLS	Safe Limited Speed
SDI	Safe Direction

Safe Torque Off (STO) (EN 60204-1)

The STO function makes sure that the torque-generating energy has no effect on the motor. The STO function prevents the motor from an automatic start-up. The control unit of the motor monitors the operating state.

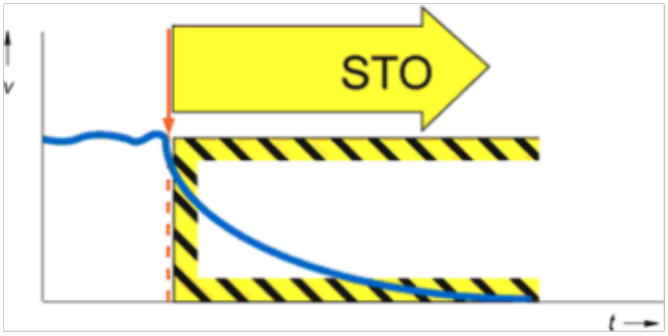


Figure 5: Safe torque off

Safety Instructions for Maintenance Work

1. The safety devices in the safety circuit are not to be opened. The safety circuit is not to be changed.
2. The defective safety devices are to be replaced with the full work unit only.
3. Only let the manufacturer or an organization (Rieter Repair Station) that has written approval repair the safety devices.
4. The necessary measures are given in the "Maintenance" chapter in the operation manual.

After Replacement of a Safety Component

1. Do a function test of the safety circuit. *Inspection Tasks ▸ 97*
2. Record the results of the function test in the protocol for the safety circuit in the electrical documentation. Record in the protocol of the safety circuit in the electrical documentation if a safety device was replaced. *Protocol for the Safety Circuit ▸ 89*

Exclusion of Liability

The standards in the operation manual are to be obeyed. Opened or changed safety devices can cause injuries to personnel or damage to the machine.

If changes that are not approved are made to the safety devices, the warranty by Rieter is not applicable.

The customer has full responsibility for costs that are caused by changes that are not approved to the safety devices.

2.9 Product Safety

This chapter contains information about the product safety.

2.9.1 Overview of the Safety Elements and Danger Zone

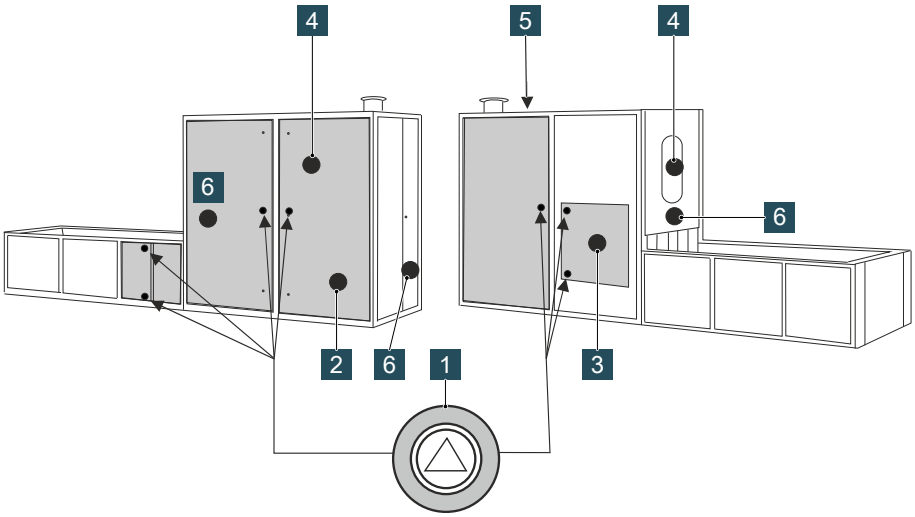


Figure 6: Overview of the safety elements and danger zone

1 *Safety Devices at the Machine ▸ 33*	2 *Danger Zone at the Regulating Flap ▸ 29*
3 *Window of the Mixing Chamber ▸ 32*	4 *Covers and Windows ▸ 31*
5 *Danger Zone at the Top Cover Plate ▸ 27*	6 *Safety Symbols at the Machine ▸ 24*

2.9.2 Safety Symbols at the Machine

The safety symbols show the areas with an increased risk of injury if work is done incorrectly. Damaged or missing safety symbols are to be replaced immediately.

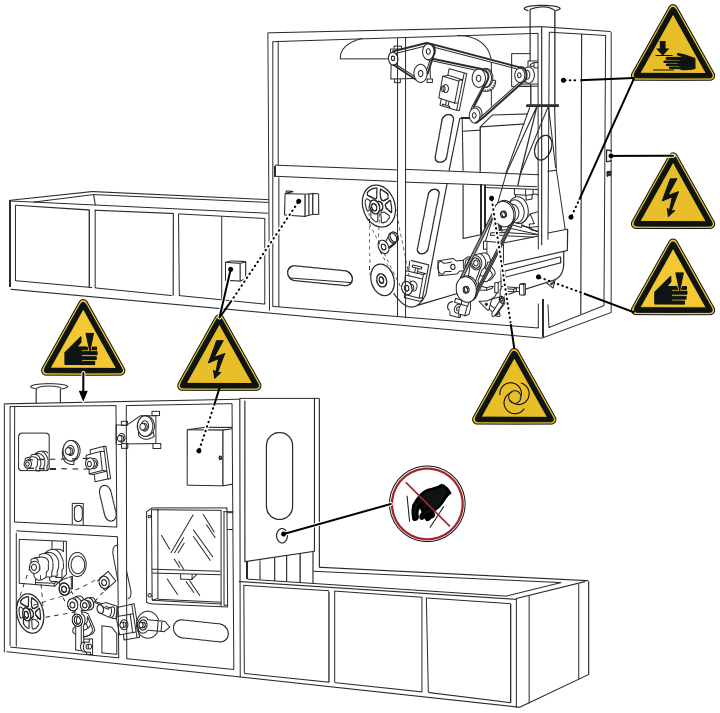


Figure 7: Safety symbols at the machine

The dotted lines are for the safety symbols that are put at the inner side of the machine.

Safety Symbol	Description	Location
	Squeeze of hands!	– Beside the motor of the spiked lattice and the conveyor belt – Beside the motor of the feed rollers
	Hand injuries!	– At the regulating flap – At the top cover plate
	Rotating parts!	– Beside the motor of the opening roller
	No reaching-in!	– At the plate above the material inlet

Safety Symbol	Description	Location
	Electric shock!	– At the safety hood behind the main switch – At the control cabinet – At the terminal box on the left side wall of the feed belt – At the terminal box on the left frame of the machine

2.9.3 Danger Zone at the Machine

This chapter contains the information about the danger zones at the machine. The machine has 2 types of danger zones, including the mechanical danger zone and the electrical danger zone.

2.9.3.1 Danger Zone at the Material Inlet

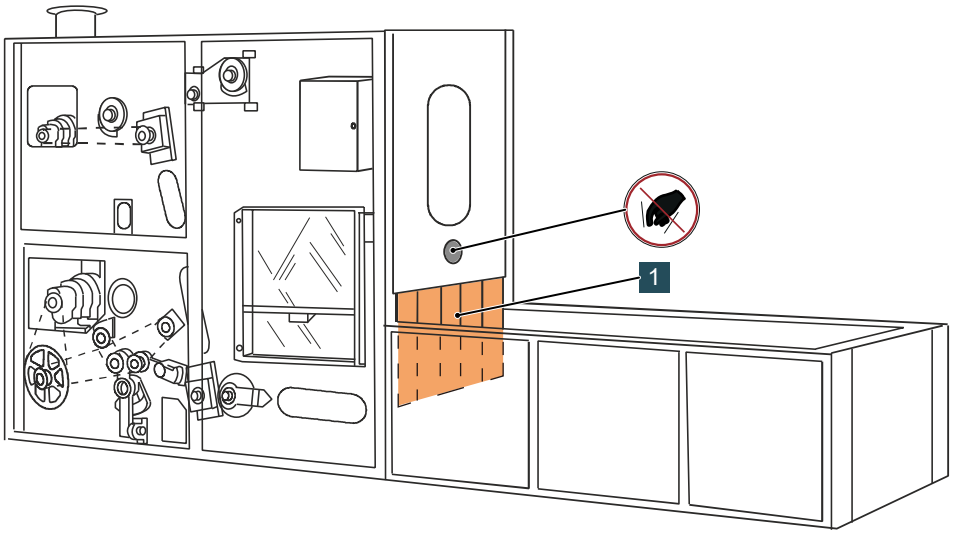


Figure 8: Danger zone at the material inlet

When the machine is in operation, a risk of body injuries is in the area of the material inlet 1.

The person is not permitted to reach into the area of the material inlet 1 when the machine is in operation.

2.9.3.2 Danger Zone at the Top Cover Plate

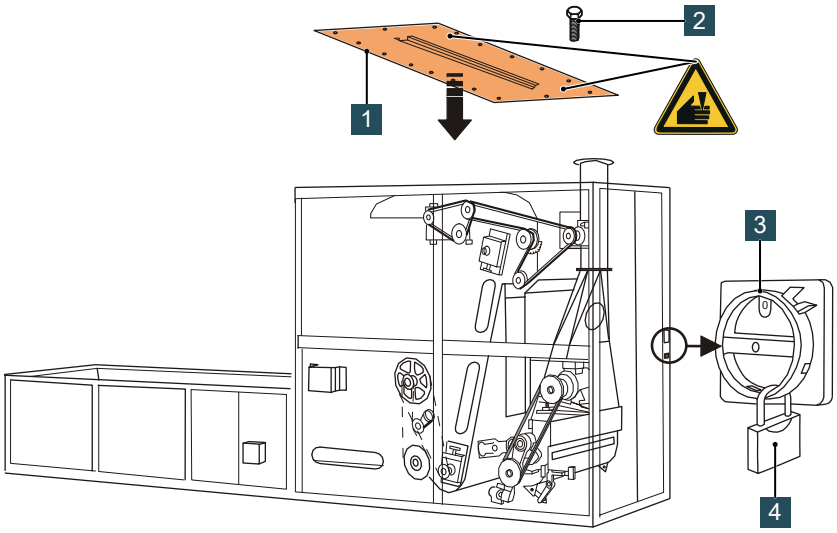


Figure 9: Danger zone at the top cover plate

The top cover plate 1 is installed with bolts 2.

Before doing the work near the area of the clearer roller, stripping roller and take-off roller, the top cover plate 1 is to be removed. Hand injuries are possible to occur if the person removes the top cover plate 1 and touches the rotating rollers below the top cover plate 1.

Before removing the top cover plate 1, the criteria that follow are to be obeyed:

- The machine is at a standstill.
- The main switch 3 is set to the position OFF and the main switch is padlocked.

The padlock 4 is removed only when the top cover plate 1 is installed back to the machine.

2.9.3.3 Danger Zone at the Drive Units

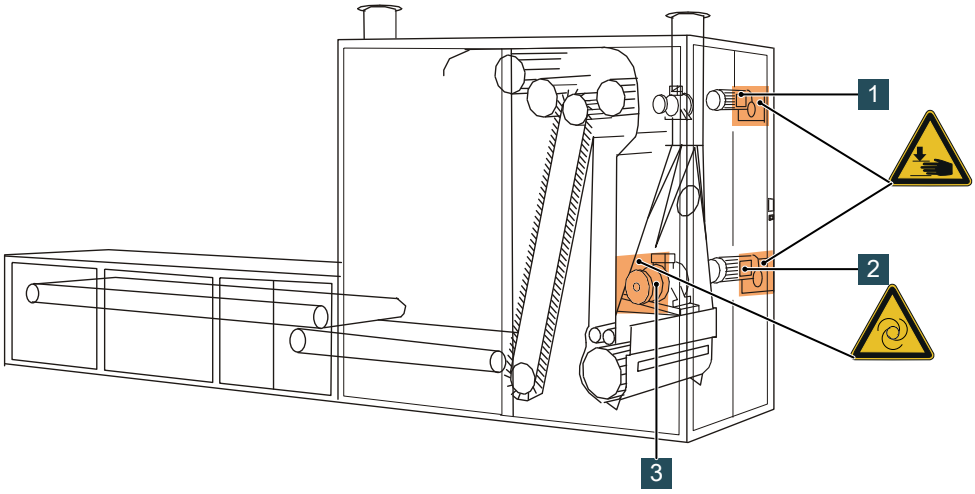


Figure 10: Danger zone at the drive units

1	Drive of the spiked lattice and the conveyor belt	2	Drive of the feed rollers
3	Drive of the opening roller		

When the machine is in operation, the belts of the drives 1, 2 and 3 rotate.

Hand injuries are possible to occur if the person touches the area of the drives 1, 2, and 3.

When the machine is in operation, the person is not permitted to put hands in the area of the drive units.

2.9.3.4 Danger Zone at the Regulating Flap

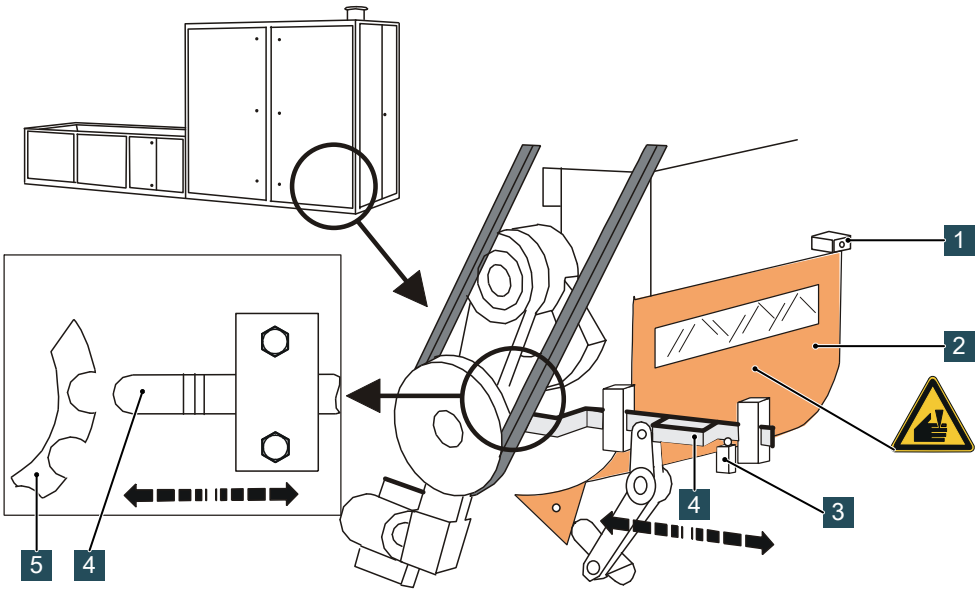


Figure 11: Danger zone at the regulating flap

Hand injuries are possible to occur if the person opens the regulating flap 2 and touches the rotating opening roller 5.

Before opening the regulating flap 2, the criteria that follow are to be obeyed:

- The machine is at a standstill.
- The main switch is set to the position OFF and the main switch is padlocked.
- The stationary opening roller 5 is secured with the locking lever 4.

The locked opening roller 5 and the open regulating flap 2 are also secured with limit switches 1 and 3.

2.9.3.5 Danger Zone behind the Main Switch

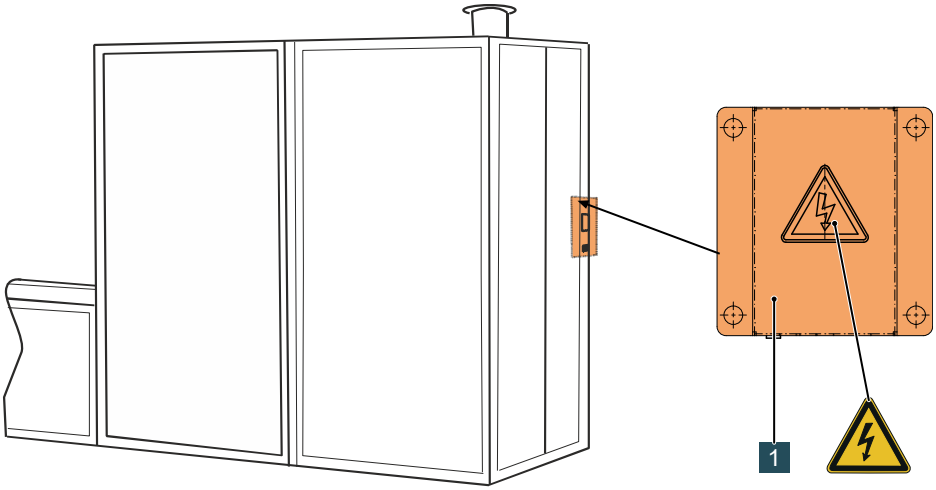


Figure 12: Danger zone behind the main switch

The safety hood 1 is behind the main switch.

When the safety hood 1 is opened, a risk of injury is possible to occur because of an electric shock if the person touches the live components.

Only approved personnel are permitted to open the safety hood 1.

2.9.3.6 Danger Zone at the Control Cabinet

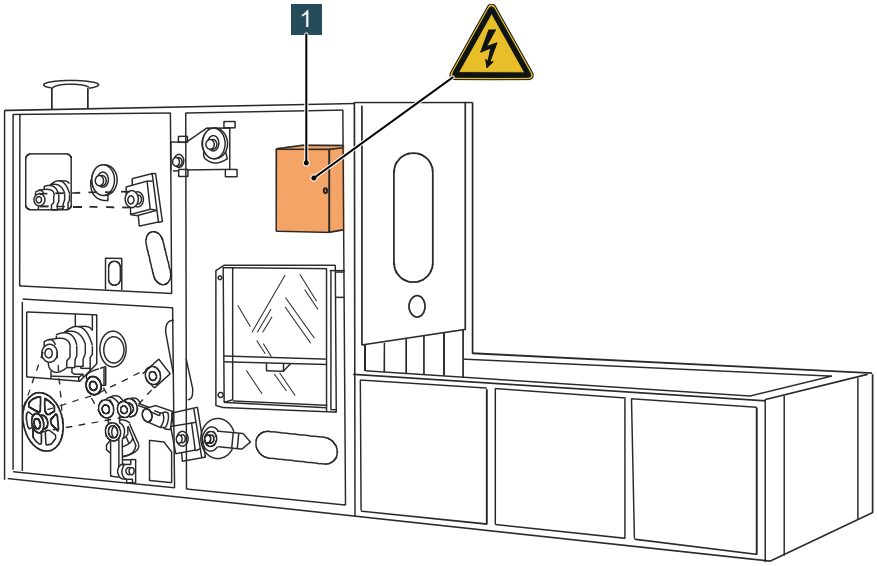


Figure 13: Danger zone at the control cabinet

The control cabinet 1 contains the live components. A risk of injury is possible to occur because of an electric shock if the person touches the live components.

Only approved personnel are permitted to open the door of the control cabinet 1.

2.9.3.7 Danger Zone at the Terminal Box

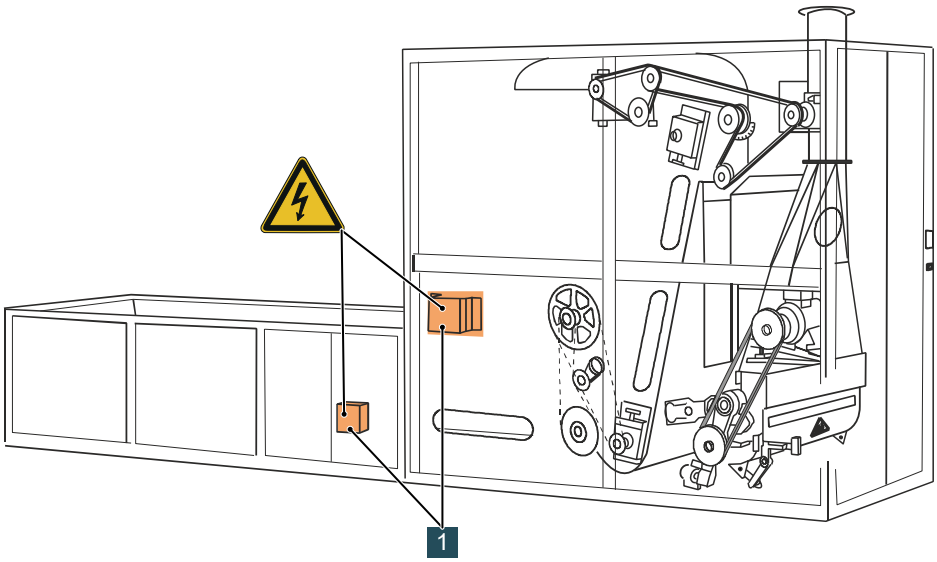


Figure 14: Danger zone at the terminal box

When the terminal boxes 1 are opened, a risk of injury is possible to occur because of an electric shock if the person touches the terminal bridges.

Only approved personnel are permitted to open the terminal boxes 1.

2.9.4 Covers and Windows

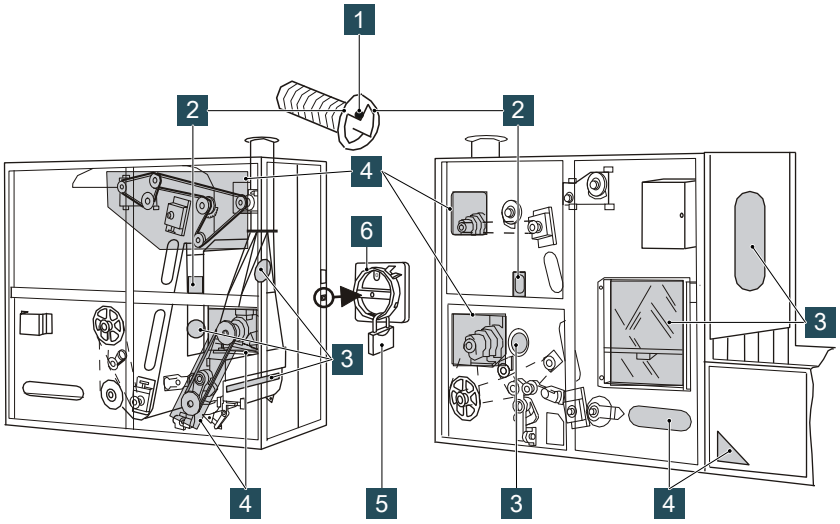


Figure 15: Covers and windows

WARNING

Access to moving parts when the sheet metal covers are removed!

Risk of injuries when the machine starts.

▶ Before start of the machine, make sure that all covers are installed in accordance with the instructions.

All screwed-on covers and windows 2, 3 and 4 act as safety components.

Before removing the covers and windows, the criteria that follow are to be obeyed:

– The main switch 5 is set to the position OFF.

– The main switch 5 is secured with a padlock 6.

The padlock 6 is removed only when all covers and windows are installed back on the machine.

The windows 2 are installed with safety switches 1. Screwdrivers and hexagonal keys are not permitted to remove the screws. If a window is necessary to be replaced, the screws are to be removed with force, for example, a chisel.

Damaged or missing windows and covers must be replaced immediately.

2.9.4.1 Window of the Mixing Chamber

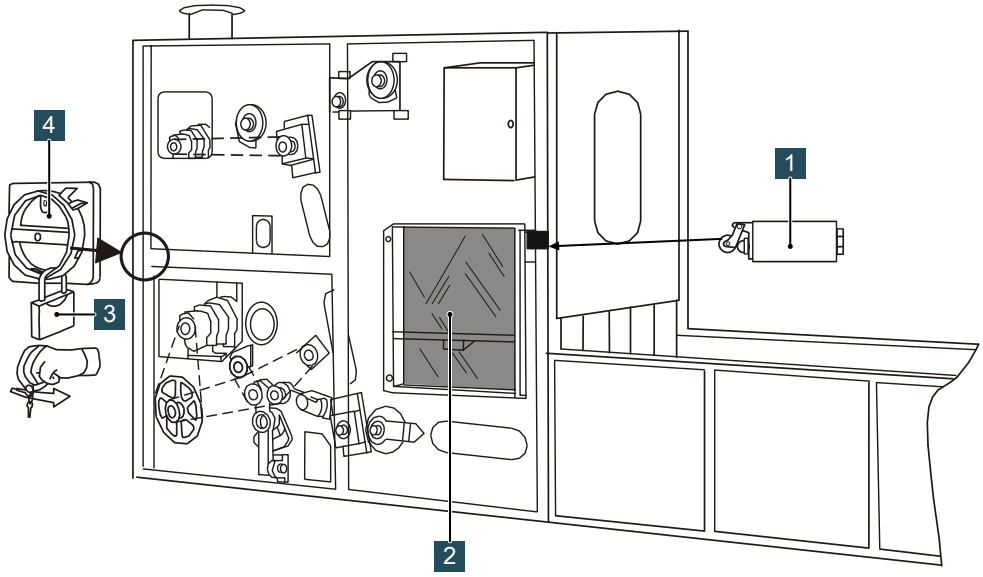


Figure 16: Window of the mixing chamber

The window 2 of the mixing chamber is additionally monitored by a safety switch 1.

Before entering the mixing chamber, the criteria that follow must be obeyed:

– The main switch 4 is set to the position OFF.

– The main switch 4 is secured with a padlock 3.

2.9.5 Safety Devices at the Machine

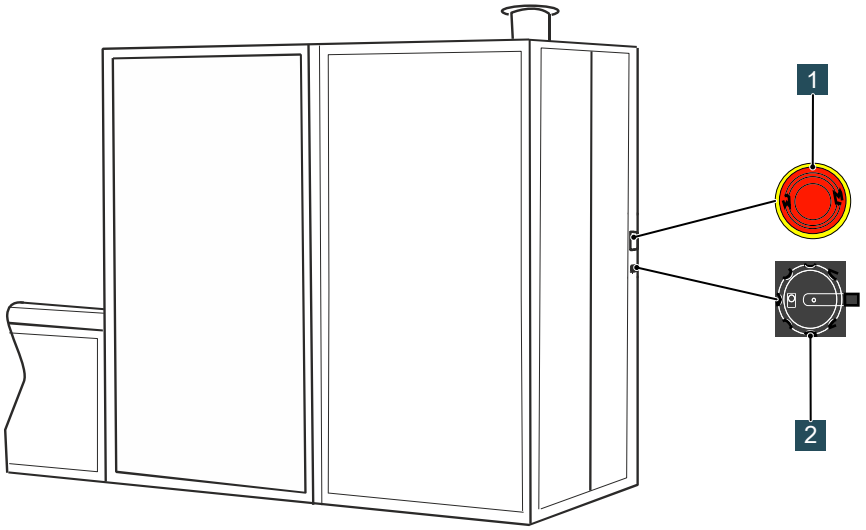


Figure 17: Safety devices at the machine

The machine has the safety devices that follow:

– Main switch 2
– Emergency stop button 1
– Safety devices at the door

Main Switch

The main switch has the position 0/OFF and the position I/ON. The main switch is set to the position 0/OFF to disconnect the power supply from the machine. The main switch is set to the position I/ON to connect the power supply to the machine. The main switch is not an emergency stop button.

The main switch is to be set to the position 0/OFF and the main switch is to be padlocked before the maintenance work and the repair work.

Emergency Stop Button

The emergency stop button is only used in an emergency. When the operator pushes the emergency stop button, the results that follow occur:

– The machine stops immediately.
– All connected peripheral machines of the machine stop immediately.

The emergency stop button is possible to be released by turning the button.

Safety Devices at the Door

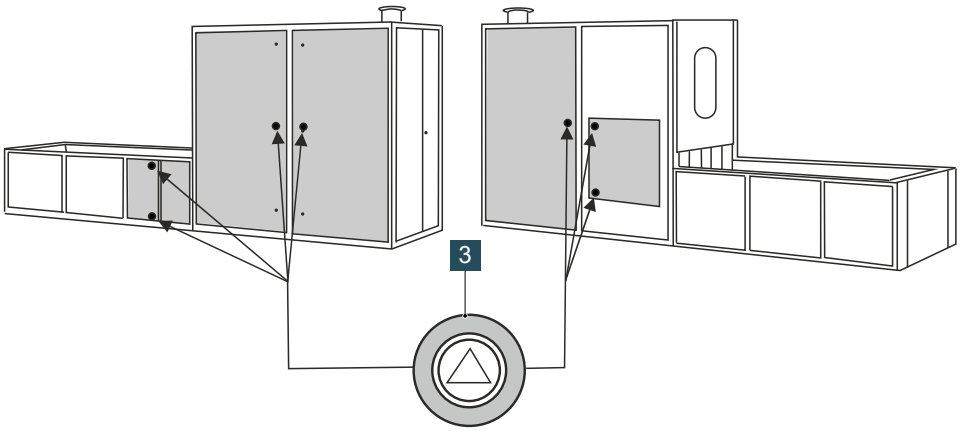


Figure 18: Safety devices at the doors

DANGER

The safety devices are removed or bypassed!

Death or dangerous injuries

- ▶ Do NOT remove the installed safety devices.
- ▶ Do NOT bypass the installed safety devices.

Doors and covers identified with red rings 3 are secured with safety switches. If such a door is opened, the drive units behind the doors are deactivated immediately.

The function of the safety switches is to be examined regularly. See *Doing the Function Test of the Safety Devices* ▸ *100*

3 Product Information

This chapter contains information about:

- The intended use of the machine
- The location of the identification plate
- The primary machine assemblies
- The basic machine functions
- The technical data
- The EC/EU Declaration of Conformity

3.1 Intended Use

The Waste Opener does the recycling and the opening of the waste material to return the waste material to the production process. The Waste Opener is loaded manually.

The personnel that operate the machine must obey the instructions in this operation manual. All operations other than the operations given in this operation manual are **not** permitted.

3.2 Raw Materials

The machine only uses the textile raw materials that follow:

Cotton	From all sources
Man-made fibers	Natural and synthetic polymers
Maximum fiber length	65 mm
Maximum cut length	60 mm

3.3 Function Description

The chapters that follow contain information about the function of the machine and the primary components.

3.3.1 Description

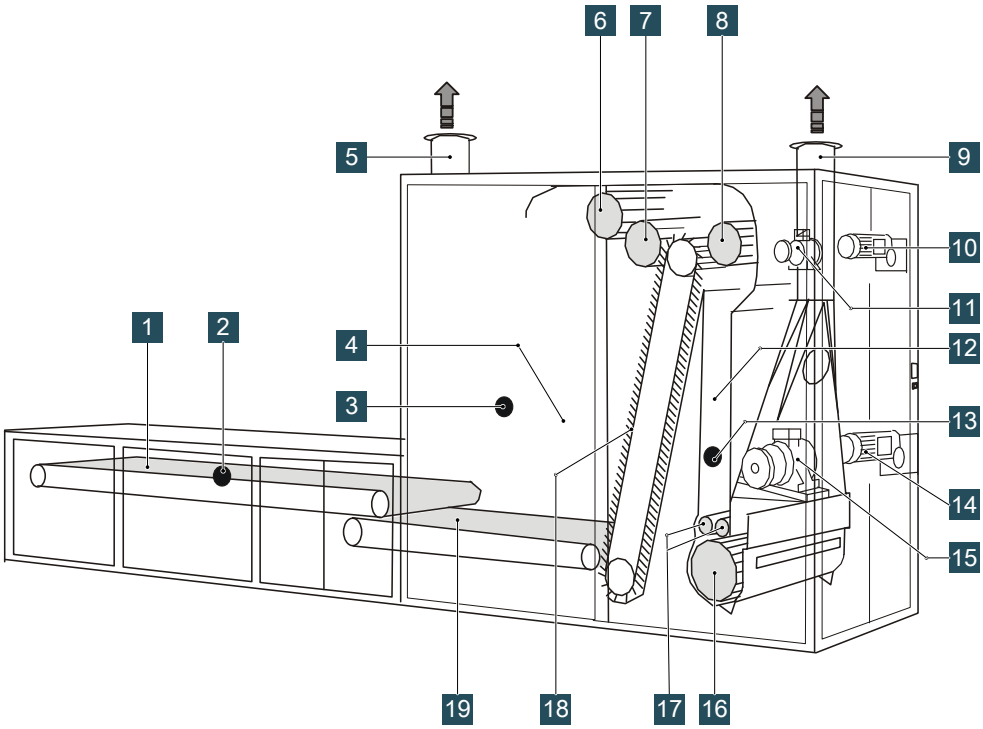


Figure 19: Waste opener

1	Feed belt	2	Light barrier
3	Light barrier in the mixing chamber	4	Mixing chamber
5	Dust extraction channel	6	Clearer roller
7	Stripping roller	8	Take-off roller
9	Material delivery channel	10	Motor of the spiked lattice and the conveyor belt
11	Motor for the clearer roller 6, the stripping roller 7, and the take-off roller 8	12	Feed trunk
13	Light barrier	14	Motor of the feed rollers
15	Motor of the opening roller	16	Opening roller
17	Feed rollers	18	Spiked lattice
19	Conveyor belt		

The downline machine requires material.

The operator put the waste material to be loosened onto the feed belt 1.

The waste material is then passed onto the conveyor belt 19.

The light barrier 2 signals a fault if the material feed is interrupted or comes to an end.

The conveyor belt 19 brings the material to the mixing chamber 4.

Excess material is returned by the stripping roller 7 and clearer roller 6 to the mixing chamber 4.

The returned material is mixed again and picked up by the spiked lattice 18 again.

The filling of the mixing chamber 4 is monitored by a light barrier 3 that engages and disengages the clutch of the feed belt 1.

The take-off roller 8 removes the material from the spiked lattice 18 and the material falls into the feed trunk 12.

The light barrier 13 interrupts the material feed from the spiked lattice 18.

The feed rollers 17 feed the material to the opening roller 16 where the material is opened.

The opened material is drawn upwards through the material delivery channel 9 by the next machine.

The dust made in the mixing chamber 4 is drawn off through the dust extraction channel 5.

3.3.2 Light Barriers

This section contains the information about the function descriptions of the light barriers.

3.3.2.1 Light Barrier on the Feed Belt

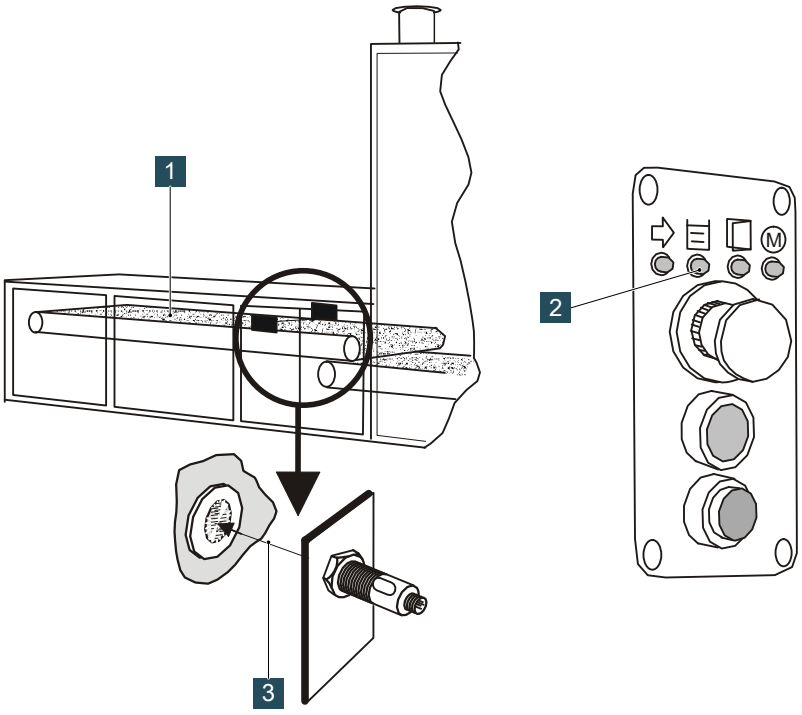


Figure 20: Light barrier on the feed belt

When no more material is on the feed belt 1, light beam 3 becomes free. The signal lamps 2 on the machine and on the blowroom operating unit come on. An acoustic signal sounds.

3.3.2.2 Light Barrier in the Mixing Chamber

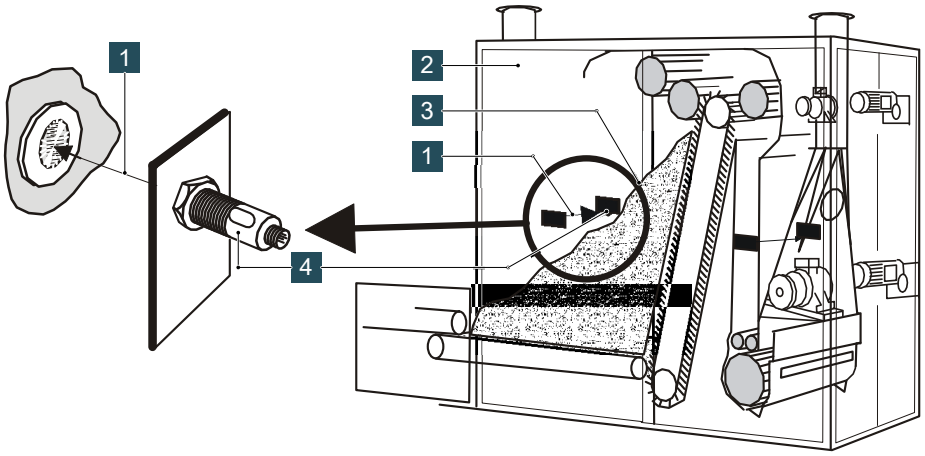


Figure 21: Light barrier in the mixing chamber

If the light beam 1 is interrupted by the material volume in the mixing chamber 2, the material supply to the mixing chamber 2 stops.

The filling volume 3 is influenced by adjusting the height of the light barrier 4 on the 2 sides of the machine.

The volume of supplied material must be adapted to be higher than the production of the machine. This means that the filling volume 3 should be as constant as possible.

3.3.2.3 Light Barrier in the Feed Trunk

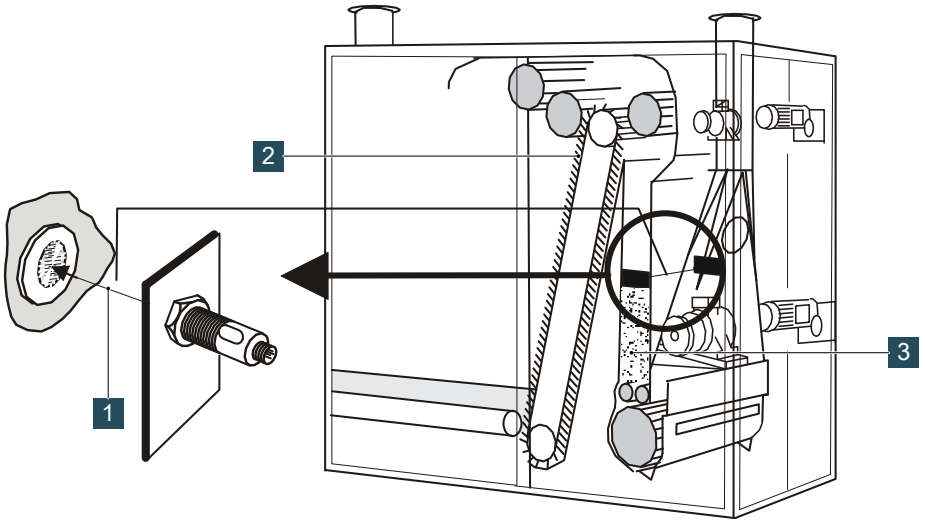


Figure 22: Light barrier in the feed trunk

The spiked lattice 2 no longer supplies material to the feed trunk 3 when the light beam 1 is interrupted.

3.4 Technical Data

The information about the technical data is for a standard machine.

3.4.1 Performance Characteristics

Raw Materials

Cotton	All sources
Man-made fibers	Max. 65.0 mm
Noils	All

The machine is used only for the processing of the raw textile materials. Non-textile raw materials must not be processed on the machine.

Production Rate in the Range 3..60 kg/h

3 % of 400 kg	12 kg
3 % of 600 kg	18 kg
3 % of 800 kg	24 kg
3 % of 1200 kg	36 kg
5 % of 400 kg	20 kg
5 % of 600 kg	30 kg
5 % of 800 kg	40 kg
5 % of 1200 kg	60 kg
10 % of 400 kg	40 kg
10 % of 600 kg	60 kg
Waste admixture expressed in % and dependent on production rate of blowroom line	

Average Material on the Feed Board

Length: 3 m	18 kg
Length: 4.5 m	27 kg
Length: 6 m	36 kg
Length: 7.5 m	45 kg
Length: 9 m	54 kg

3.4.2 Electrical Data

Mains Connection

If the mains voltage is not within the specified range, a transformer must be used to ensure stable conditions.	3 x 400 V +/- 10 %

Installed Electric Power

More machine specific-data is available in the electrical documentation.

3.4.3 Weights

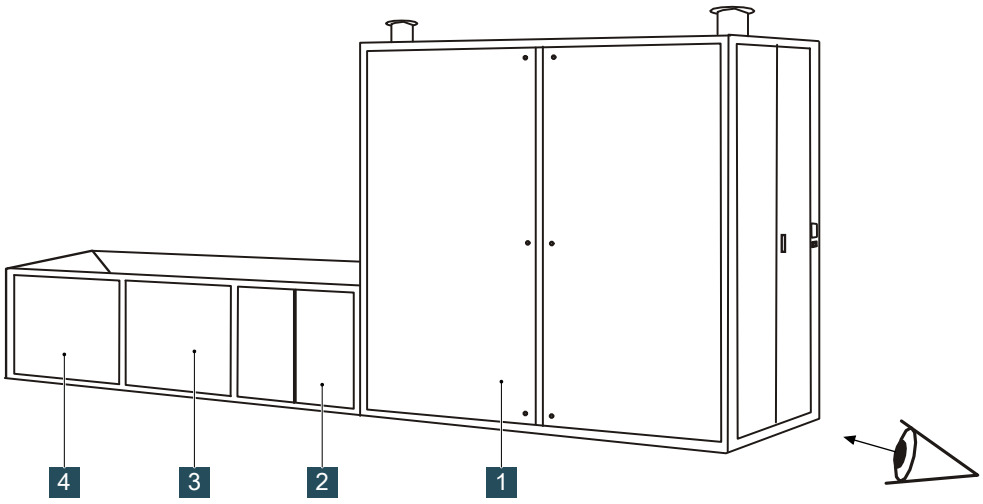


Figure 23: Weights

Assembly	Weight (kg)
Complete machine 1	1450
Front section with drive 2	300
Intermediate section (extension) per 1.5 m 3	150
Rear section 4	170

3.4.4 Definition of Machine Sides

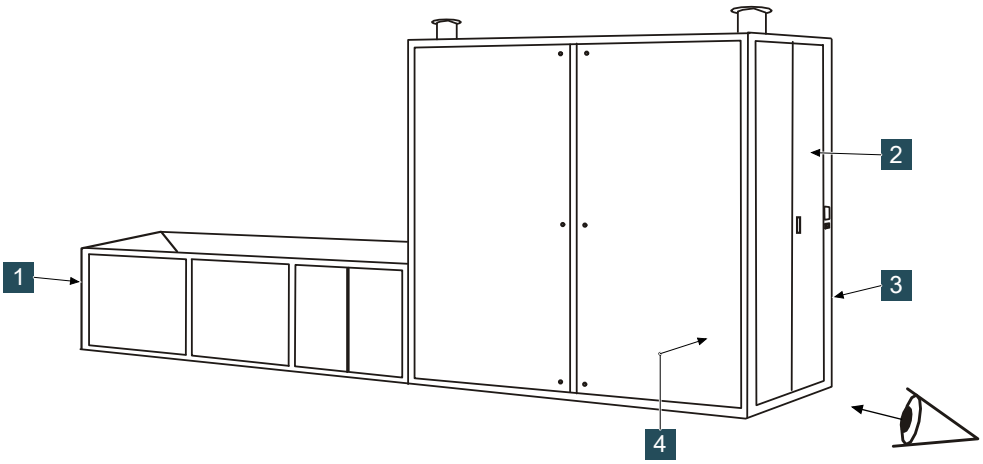


Figure 24: Definition of machine sides

1	Rear side of machine	2	Front side of machine
3	Right-hand side of machine	4	Left-hand side of machine

3.4.5 Machine Layout

This section contains the information about the dimensions of the machine.

All dimensions are given in metric unit: mm.

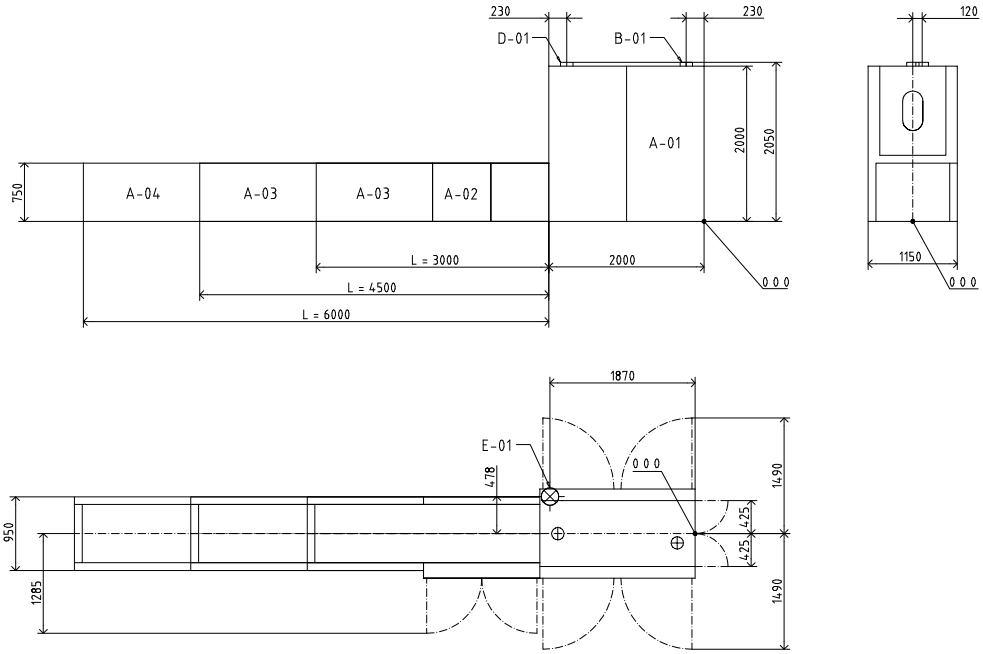


Figure 25: Machine layout

Connections

Location Number	Designation	Dimension (mm)
B-01	Material exit	Ø 160

Location Number	Designation	Dimension (mm)
D-01	Exhaust air	Ø 160
E-01	Electrical connection downwards	Ø 100
B-01 and D-01 are the machine openings. E-01 is the floor opening.		

Weights

Location Number	Designation	Weights
A-01	Complete machine	Refer to *Weights* ▸ *40*
A-02	Front section with drive	
A-03	Intermediate section	
A-04	Rear section	

3.4.6 Machinery Requirements

This section contains the information about the clothing.

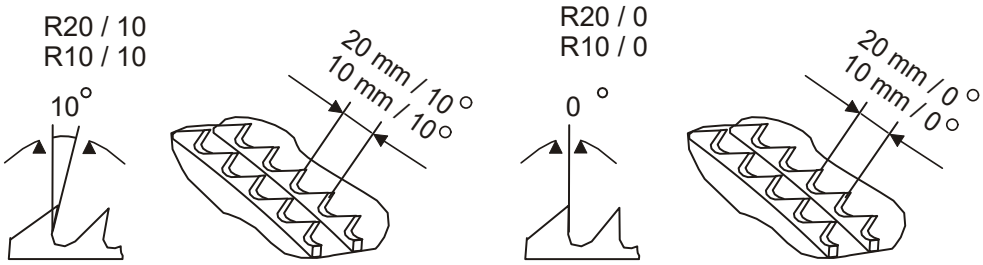


Figure 26: Clothing

R20/10 for Cotton Over 1½”

R20	20 mm (tooth distance)
10	10°

R10/10 for Cotton to 1½"

R10	10 mm (tooth distance)
10	10°

R20/0 for Man-made Fibers 40 to 60 mm

R20	20 mm (tooth distance)
0	0°

R10/0 for Man-made Fibers Below 40 mm

R10	10 mm (tooth distance)
0	0°

3.4.7 Sound Emission

The ISO 9902 is 1 of the standards in the ISO 4871.

The standard ISO 9902 is to be obeyed to measure the sound emission. The sound emission is to be measured at a distance of 1 m from the machine.

The formula of the sound emission is L_m + K.

- L_m = Mean value
- K = 3 dB (safety margin)

L_{Wad}: Declared A-weighted sound power level (reference power: 1 pW)

Operating without material: Normal production	< 70 dB

The sound emission is measured with the conditions that follow:

- No material is in the machine.
- The machine has no external fans.
- The cylinder turns at 960 rpm.

L_{pAd}: Declared A-weighted sound pressure level at work station (reference pressure: 20 µPa)

Operating with material: Normal production	< 70 dB

The sound emission is measured with the conditions that follow:

- No material is in the machine.
- The machine has a central suction system.
- The cylinder turns at 960 rpm.

3.5 Machine Identification

This section contains the information about the machine identification plate and the electrical rating plate.

3.5.1 Identification Plate

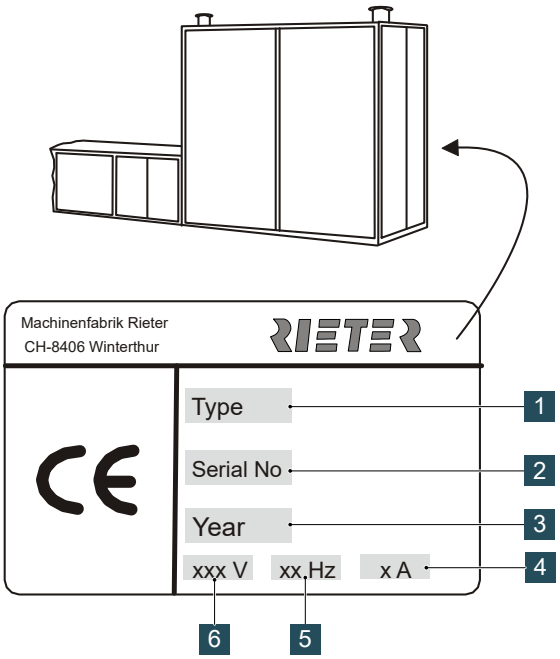
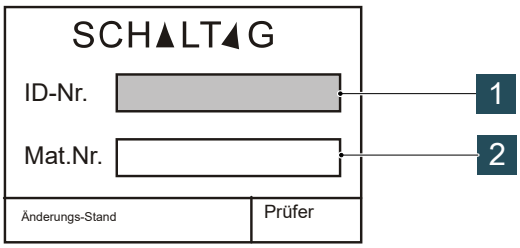


Figure 27: Identification plate

1	Machine type	2	Serial number
3	Year of manufacture	4	Rated current
5	Frequency	6	Voltage of power supply

The identification plate is put in the area of the main switch. When the spare parts are ordered, the information data that is shown in the table above must be shown on the order form.

3.5.2 Electrical Rating Plate



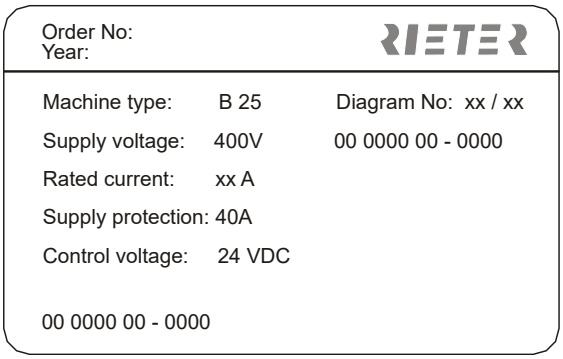


Figure 28: Electrical rating plate

1	Identification number	2	Material number

The identification number 1 and the material number 2 are used for quality assurance.

These plates are attached to the wall inside the electrical control cabinet. The electrical schematics corresponding to the machine design are supplied separately. When the spare parts are ordered, the information given on the ID plate is to be recorded on the order form. When machine malfunctions are reported, the information given on the ID plate and the ID number are to be given.

3.6 EC/EU Declaration of Conformity

EC Declaration of Conformity

Maschinenfabrik Rieter AG
Klosterstrasse 20
CH-8406 Winterthur
T +41 52 208 71 71
F +41 52 208 70 60
www.rieter.com

Winterthur, 29. March 2016

Maschinenfabrik Rieter AG declares under sole responsibility that the product

Waste Opener B25

Serial Nr. 40023351-xxxx

to which this declaration relates is in conformity with the following standards.

ISO 11111-1 Part 1, ISO 11111-2 Part 2, EN 60204-1:2006 Part 1

Following the provisions of Directives:

Machinery Directive 2006/42/EC;
Electromagnetic Compatibility Directive 2004/108/EC
Including their modifications

Responsible for the technical documentation is: Guido Lüönd, Product Safety Officer, Maschinenfabrik Rieter AG, Klosterstrasse 20, 8406 Winterthur, Switzerland

Maschinenfabrik Rieter AG

W. Rütti
Head Products SYS

P. Schelling
Head Development Opening

Figure 29: EC certificate

4 Packaging and Transportation

This chapter contains information about:

- The general packaging instructions
- The packaging
- The packaging accessories
- The instructions on safe machine transport

4.1 Packaging and Transportation Personnel

Only Rieter-approved personnel are permitted to:

- Remove the packaging material or put the machine in the packing material
- Remove the machine from the material boxes or the transportation pallets
- Install the machine in the material boxes or on the transportation pallets

4.2 Liability for Unloading and Transportation

The customer is liable for the transportation to the installation site and the temporary storage. The customer is liable to remove the machine components from the trucks at the installation site.

The installation personnel do not move machine components to the installation site or remove components from the trucks at the installation site. In the case that instructions from the installation personnel are necessary, the installation personnel is not responsible for damage that occurs.

4.3 Removing the Packaging Material

1. Do not keep the material boxes in a cold room before the packaging material is removed. Keep the machine and the components in the packaging material in the installation location for minimum 24 hours.
2. Open the material boxes.
3. Remove the packaging material and the drying agents.
4. Examine if the machine or parts of the machine got damage during the transport.
5. If machine damage occurred, the personnel must tell the customer to give a report to the insurance office.
6. To examine the contents of the material boxes for missing parts, use the packing list.
7. If the material boxes do not contain all parts, the personnel must tell the customer to give a report to Rieter.
8. Remove the transport locks from the material boxes and the transportation pallets.

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5 Installation

This chapter contains information about:

- The necessary installation conditions
- The necessary installation personnel
- How to prepare the set-up location for the machine.
- The necessary installation material
- The installation of the machine

5.1 Floor Condition

Floor Structure

If the floor structure is not stable and not flat, the machine is possible to be damaged.

Only approved personnel can make a plan of the floor structure. The floor load of each machine foot is to be obeyed. Soft materials such as slag, sand, and asphalt are not to be used as an intermediate layer 2. If soft materials are used as the intermediate layer, the vibration that the machine causes moves the intermediate layers 2.

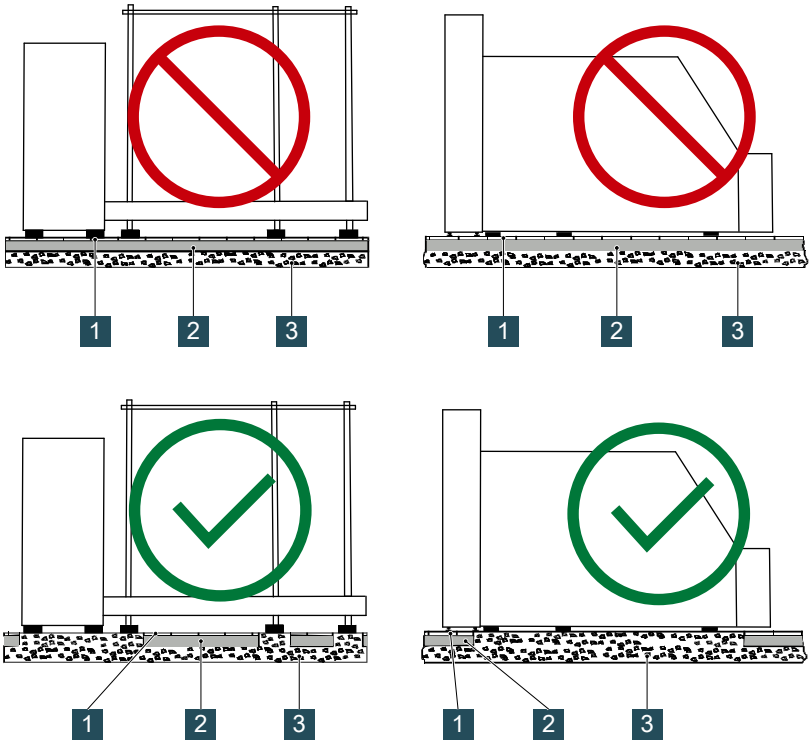

Figure 30: Floor condition

1	Flooring	2	Intermediate layer

3 Concrete substrate

Flooring 1 such as clinker, concrete slabs, or hard surfaces are not to be installed on the intermediate layers 2 that are made of slag, sand, and asphalt. To have a horizontal surface, a minimum of the area of the machine foot is to be filled with concrete substrate 3.

Rieter accepts no liability for machine damage that is caused because the incorrect floor structure was used.

Floor Properties

The floors must have the properties that follow:

- Not aggressive to metals
- High abrasion resistance
- High compressive strength
- Slip-resistant
- Hard and tough, non-ceramic
- No expansion joint in the machine foundation
- Resistant to
  - Oils
  - Fuel
  - Acids
  - Alkalis

Level and Evenness of the Floor

For each running meter	±4 mm
For each 4 m	±10 mm

5.2 Installation Requirements for the Customer

The customer:

- Must give instructions about the danger zones of the installation site
- Must tell the installation personnel about the site-specific safety regulations
- Must make sure of the site-specific safety
- Must install the necessary rails
- Must make sure that the training for the installation personnel is done before the installation
- Must make sure that the installation personnel of the customer are not changed during the installation

– Must make sure that the installation personnel have access to the operation manual

5.3 Installation Personnel

Only Rieter personnel or Rieter-approved personnel are permitted to install the machine or to do the supervision of the installation.

5.4 Foundation Layout

This section contains the information about the foundation plan for the installation of the machine. All dimensions are given in metric unit: mm.

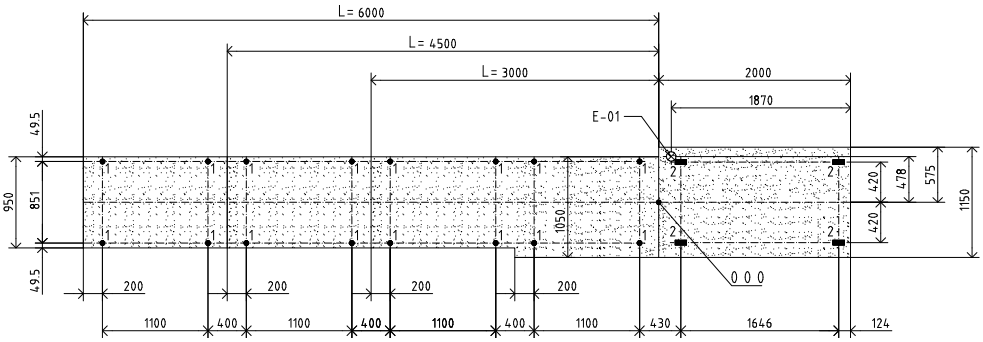

Figure 31: Foundation layout

Floor load

Type of Support	Quantity	Dimension (mm)
1 L=3000	8	Ø 50
1 L=4500	12	Ø 50
1 L=6000	16	Ø 50
2 ----	4	120x50

Connections

Location Number	Designation	Dimension (mm)
E-01	Electrical connection downwards	Ø 100

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6 Commissioning

This chapter contains information about:

- The commissioning personnel
- The initial commissioning of the machine
- The function test
- The recommissioning after a temporary decommissioning

6.1 Commissioning Personnel

Only Rieter personnel or Rieter-approved personnel are permitted to do the commissioning of the machine or to do the supervision of the commissioning.

6.2 Recommissioning after a Temporary Decommissioning

The operating company must make sure that the warning signs, the mandatory signs, and the prohibition signs are possible to be read.

For the recommissioning of the machine, the checklist that follows is to be used:

- The machine is in a damage-free condition.
- The power supply is connected.
- The compressed-air supply is connected.
- The anti-corrosion agent is removed.
- All technology components are clean.
- Tension is applied to all timing belts, flat belts, or V-ribbed belts.
- The main switch is not padlocked.
- The direction of rotation of the motors is examined.
- Necessary operating fluids are filled.

6.3 Introduction to Commissioning

The commissioning work has 4 different situations as follows:

Initial Commissioning after Installation

Machines that are manufactured by Rieter are to be commissioned by Rieter personnel.

See *Commssioning without Material* ▸ *54*

If the installation or initial commissioning is done by a third party, Rieter rejects all and any form of liabilities.

Commissioning after Assortment Change

After each assortment change, the adjustments are to be made accordingly.

See *Setting the Machine into Operation ▸ 73*

Commissioning after Maintenance and Repair Work

After the maintenance and repair work, the machine is to be commissioned.

See *Commssioning without Material ▸ 54*

Recommissioning after Temporary Decommissioning

For recommissioning, the check list that follows is to be obeyed:

- Put the machine into safe status.
- Connect the power again.
- Remove the corrosion preventive.

See *Recommissioning after a Temporary Decommissioning ▸ 53*

6.4 Commssioning without Material

6.4.1 Doing the Function Test of the Safety Devices

1. Set the main switch to the position ON.
2. Start the machine for operation.
3. Do the function test of the safety switches. See *Doing the Function Test of the Safety Devices ▸ 100*
4. Do the function test of the emergency stop button. See *Doing the Function Test of the Safety Devices ▸ 100*

Result The function test of the safety devices is done.

6.4.2 Setting the Reflection Light Barriers

Prerequisites Make sure that the criteria are obeyed:

✓ A time relay 3 is assigned to each light barrier. See *Setting the Time Relay ▸ 55*

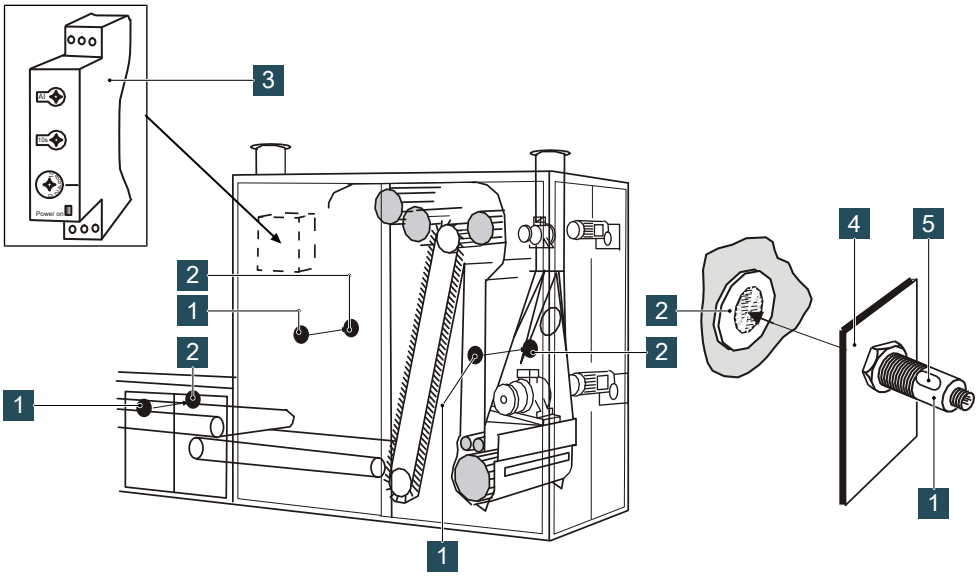


Figure 32: Reflection light barriers

1. Align the housing 4 of the reflection light barriers 1 with the reflectors 2.
2. Attach the reflection light barriers 1 with fastening bolts.
   - ⇨ The light beam strikes the center of the reflectors 2.
   - ⇨ The light beam is recognized by the red dot on the reflectors 2.
   - ⇨ The LED 5 comes on when the light beam strikes the reflector 2.
   - ⇨ The LED 5 does not come on when the light beam is interrupted.

Result The reflection light barriers are set.

6.4.3 Setting the Time Relay

The time relays are installed in the electrical control cabinet 1.

For the function switch 2, the BE function switch means the deactivation delay and the AI function switch means the activation delay.

Rough Adjustment of the Time Relay	
0.05 s	0.05...1.0 s
1 s	1.0...10 s
10 s	10...100 s
1 min	1.0...10 min
10 min	10...100 min
1 h	1.0...10 h
10 h	10...100 h

Fine Adjustment of the Time Relay	
Fine adjustment	0...10 s / min / h

Adjustment for K101, K104, K105, and K110	
K 101 machine ON	AI / 5.0 s
K 104 feed trunk	BE / 3.0 s
K 105 mixing chamber	AI / 3.0 s
K 110 feed belt	AI / 10 min

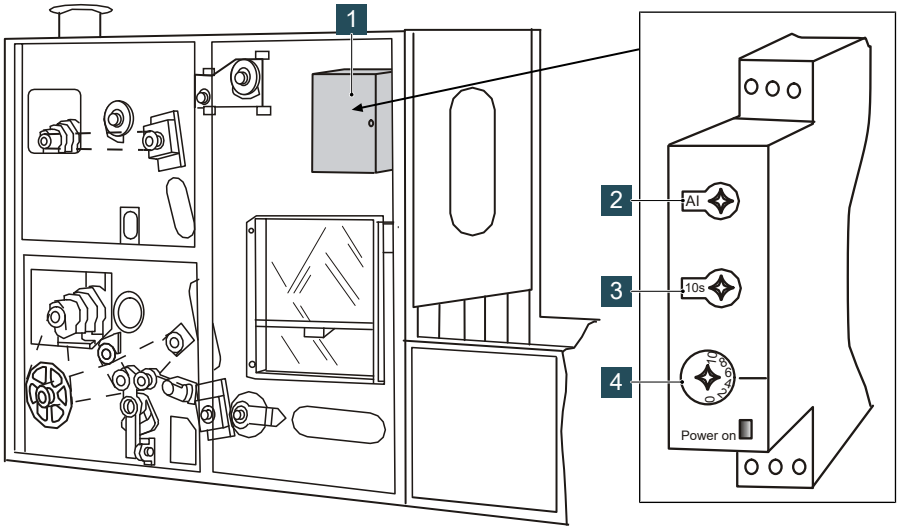


Figure 33: Time relay

1. With the function switch 3, do the rough adjustment of the time relay refer to the first above table.
2. With the function switch 4, do the fine adjustment of the time relay refer to the second above table.
3. Adjust the relays K104, K105, and K110 refer to the third above table.

Result The time relay is set.

6.4.4 Setting the Limit Switch

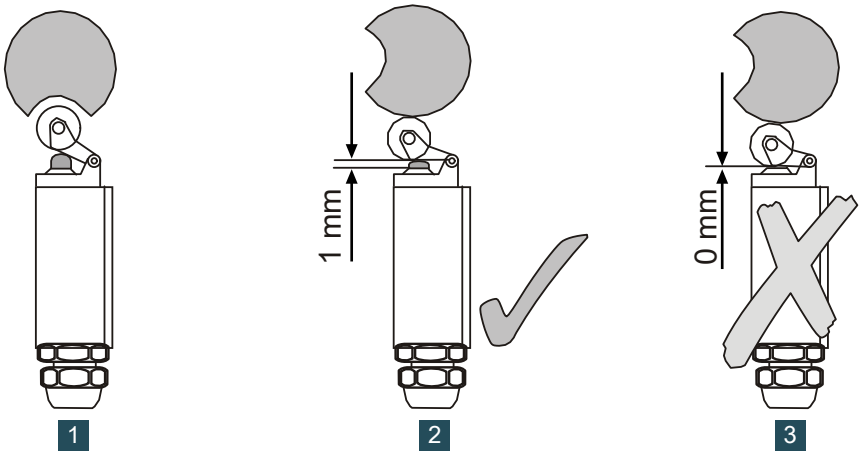


Figure 34: Limit switch

1	Free	2	Actuated
3	Set incorrectly		

1. Set the limit switch like the figure 2.
2. Refer to the figure 3, make sure that the limit switches are not pushed against the end stops.
3. Make sure that the roller lever or plunger guide is not damaged.

Result The limit switch is set.

6.4.5 Setting the Pressure Switch

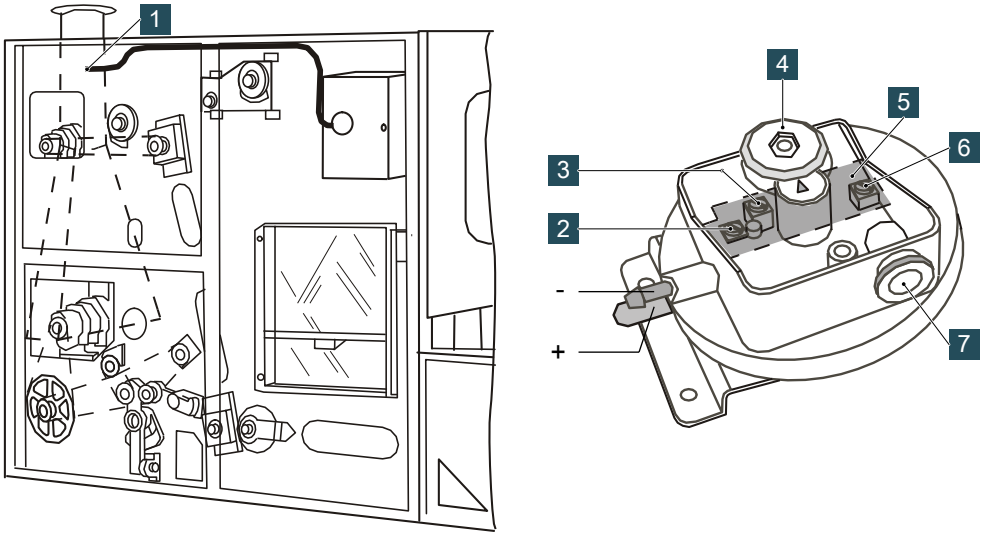


Figure 35: Differential pressure switch

+	Dust filter	-	Air connection at material outlet pipe
1	Vertical tube	2 No	Opener in the event of falling pressure
3 NC	No connection	4	Setting dial
5	Finger guard	6 Com	Incoming voltage
7	Threaded connection		

1. Monitor the vacuum in the vertical tube 8.
   ⇨ If the vacuum drops below -200 Pa, the machine stops and an alarm is triggered.
2. Set the regulator disc to -150....180 Pa.
3. If the machine cuts out too frequently, lower the pressure.

Result The pressure switch is set.

6.4.6 Tightening the Belts

1. Tighten the feed belt. See *Tightening the Feed Belt ▸ 73*
2. If necessary, align the feed belt. See *Aligning the Feed Belt ▸ 74*
3. Tighten the conveyor belt. See *Tightening the Conveyor Belt ▸ 76*
4. If necessary, align the conveyor belt. See *Aligning the Conveyor Belt ▸ 76*
5. Tighten the spiked lattice. See *Tightening the Spiked Lattice ▸ 78*

Result The belts are tightened.

6.4.7 Adjusting the Distance between the Feed Roller and the Opening Roller

1. Adjust the distance in accordance with the material that's used for production. See *Setting the Minimum Distance between the Feed Roller and the Opening Roller ▸ 85*

Result The distance between the feed roller and the opening roller is adjusted.

7 Operation

This chapter contains information about:

- The operating personnel
- The name and the location of the display elements and the operating elements
- The operating units
- How to adjust the machine without material and with material
- How to start the machine and the operation procedure
- The operation of the machine during the operation procedure
- How to stop the machine and the operation procedure

7.1 Operating Personnel

Only Rieter-approved personnel are permitted to operate the machine.

7.2 Display Elements

This chapter contains information about the display elements of the machine.

7.2.1 Display Elements of the Machine

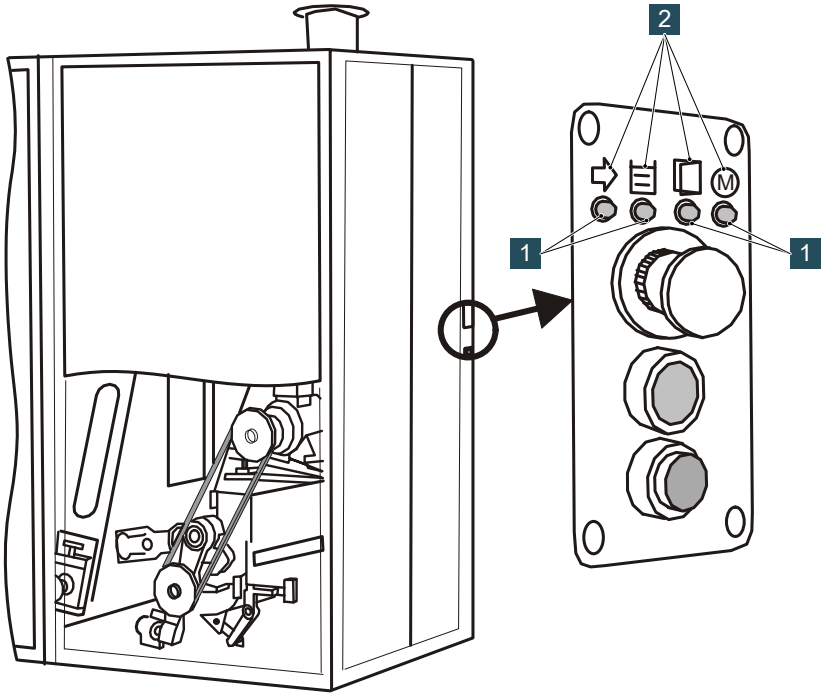
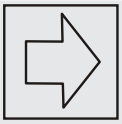
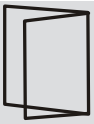


Figure 36: Display elements

The type of the display element of the machine is LED.

Machine statuses are shown by the LED 1 and symbols 2.

The display elements of the machine are shown in the table that follows.

Icon	LED	Status	Description
	Material feed	Green LED illuminates.	The machine is supplying material to the downline machine.
		Red LED illuminates.	– The feed roller monitor has tripped. – One of the limit switches on the feed rollers has been tripped.
	Material low	Yellow LED illuminates.	Material on the feed belt of the machine is not sufficient.
	Door monitor	Red LED illuminates.	A door monitored by a limit switch is open. Opening roller is still locked.
	Motor monitor	Green LED illuminates.	Motors are OK.
		Red LED illuminates.	One of the motors is overloaded.

7.2.2 Display Elements of the Frequency Converter

The display elements of the frequency converter are shown in the following table.

Figure	Name	Status	Description
	Data display	--	The data display shows the frequency reference and the parameter numbers.
	RUN LED	Illuminated	The drive is operating the motor.
		Flashes	The speed is being decreased to stop.
			The reference value for the frequency is 0.

Figure	Name	Status	Description
	STOP LED	Illuminated	The drive is not operating the motor.
		Flashes	The drive is in a fast-stop deceleration.
			The drive is stopped by interlock operation.
		Not illuminated	The drive is running.
			The speed is being decreased to stop.
			The reference value for the frequency is 0.
	ALM LED	Flashes	The drive is in an alarm state.
		Illuminated	The drive is in a fault state and the output is stopped.
	REV LED	Illuminated	The motor rotation direction is reverse.
		Not illuminated	The motor rotation direction is forward.
	DRV LED	Illuminated	The drive is ready to operate the motor.
		Not illuminated	The drive is in 1 of the modes that follow: – Verify – Setup – Parameter setting – Auto tuning
	FOUT LED	Illuminated	The output frequency is shown on the data screen.
		Not illuminated	A feature other than the output frequency is shown on the data screen.
	LO/RE LED	Illuminated	The drive is in the LOCAL mode.
		Not illuminated	The drive is in the REMOTE mode.

7.3 Operating Elements

This chapter contains information about the operating elements of the machine.

7.3.1 Operating Elements of the Machine

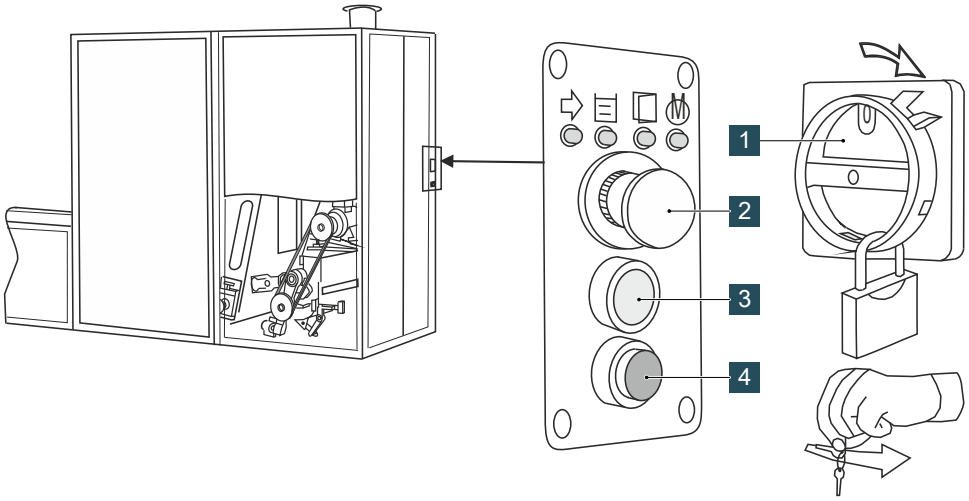


Figure 37: Operating elements of the machine

1	Main switch	2	Emergency stop button
3	Machine start button	4	Machine stop button

Main Switch

The main switch has position 0/OFF and position I/ON. The main switch is set to the position 0/OFF to disconnect the power supply from the machine or set to the position I/ON to connect the power supply to the machine.

The main switch is not an emergency stop button. Thus, before the main switch is set to position OFF, the machine is to be at a standstill.

The operator must set the main switch to position 0/OFF and padlock it before maintenance works, repair works, service works, and work in the control cabinet.

The elements carrying external voltage must be cleared before starting the work. Only an approved electrician can do the task.

Emergency Stop Button

The emergency stop button is only used in an emergency. When the operator pushes the emergency stop button, the results that follow occur:

- The machine stops as soon as possible.
- All connected peripheral machines of the machine stop immediately.
- The machine cannot be started when the emergency stop button is pushed.

The emergency stop button is possible to be released by turning the button clockwise.

Machine Start Button

When the operator pushes the machine start button:

- All the motors start.
- When the material is demanded, the feed rollers also start and, if necessary, the spiked lattice starts.

Machine Stop Button

When the operator pushes the machine stop button:

- All the motors are stopped immediately.
- The opening roller turns slightly.

7.3.2 Keys at the Frequency Converter

The keys at the frequency converter are used to set the parameters on the frequency converter.

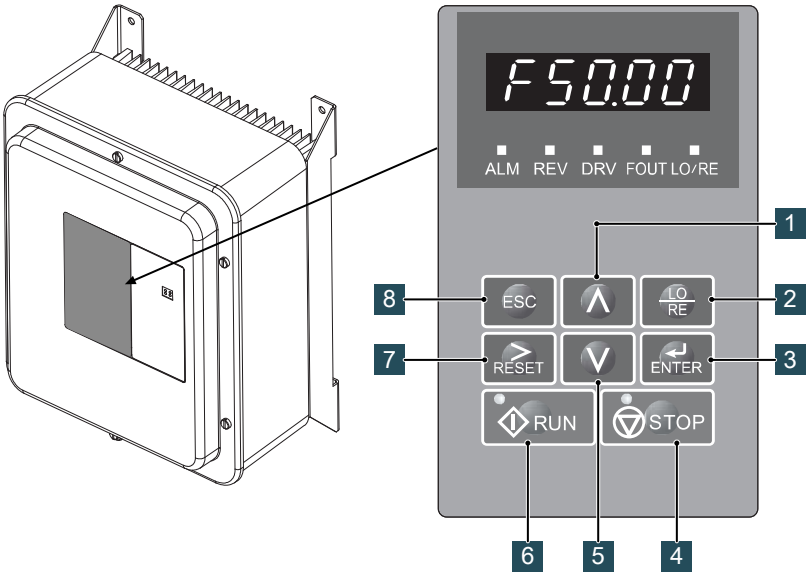


Figure 38: Keys at the frequency converter

The information about the keys at the frequency converter is shown in the following table.

Number	Name	Description
1	Up arrow key	The key has the functions that follow: – Move up the cursor to select the parameter numbers. – Set the values.
2	LO/RE selection key	The key is used to change the drive control between the operating unit (LOCAL) and the control circuit terminals (REMOTE).
3	Key ENTER	The key is used to select modes, parameters, and is used to store the set values or parameters.
4	Key STOP	The key is used to stop the drive in the LOCAL mode.
5	Down arrow key	The key has the functions that follow: – Move down the cursor to select the parameter numbers. – Set the values.
6	Key RUN	The key is used to start the drive in the LOCAL mode.
7	Key RESET	– The key is used to move the cursor to the right. – When a fault is corrected, the key is used to acknowledge the fault.
8	Key ESC	The key is used to go back to the previous menu.

7.3.3 UNIcontrol Operation

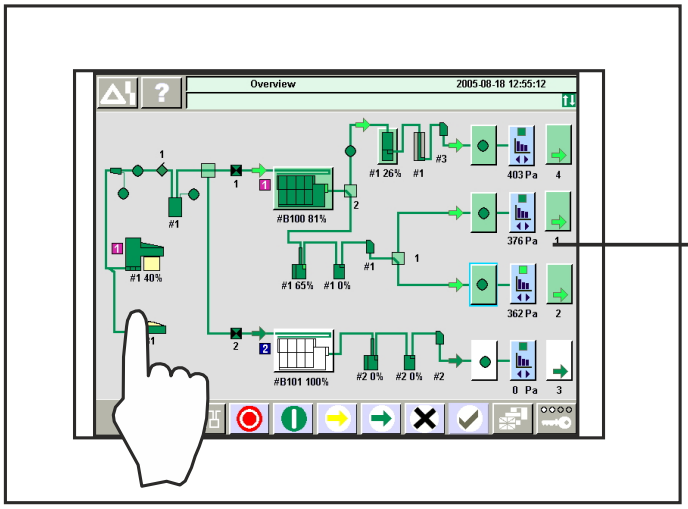


Figure 39: UNIcontrol operation

The blowroom machines are controlled centrally with UNIcontrol through the operating unit 1.

Machine-specific settings must be made in the data screens of the related machines.

The operation manual of the UNIcontrol is to be obeyed for the operation of the UNIcontrol.

7.4 Gearing Layout

This section contains the information about the gearing layout of the waster opener.

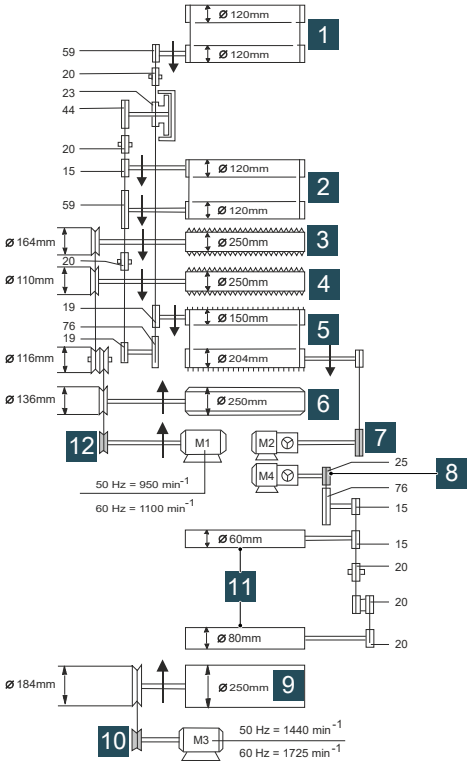


Figure 40: Gearing layout of the waste opener

1	Feed belt	2	Conveyor belt
3	Clearer roller	4	Stripping roller
5	Spiked lattice	6	Take-off roller
7	Motor pulley of the spiked lattice	8	Motor pulley of the feed rollers
9	Opening roller	10	Motor pulley of the opening roller
11	Feed rollers	12	Motor pulley of the stripping roller, the clearer roller and the take-off roller

The tables that follow contain the information about:

- Production rate at the spiked lattice
- Motor M2 for the spiked lattice
- Clearer roller, stripping roller, and take-off roller
- Motor M3 for the opening roller
- Production rate at the feed rollers
- Motor M4 for the feed rollers

To adjust the production rate, the user can see *Setting the Production Rate at the Spiked Lattice Drive* ▸ *77* and *Setting the Production Rate at the Feed Roller Drive* ▸ *83*.

Production Rate at the Spiked Lattice

50/60 Hz chain wheel sprocket 25	0 - 15 kg
50/60 Hz chain wheel sprocket 44	15 - 40 kg
50/60 Hz chain wheel sprocket 56	40 - 120 kg

Motor M2 for the Spiked Lattice

50/60 Hz motor M2	6.4 - 45.2 rpm

Clearer Roller, Stripping Roller, and Take-off Roller

50 Hz M1 motor pulley 12	ø94mm / ø122 mm
60 Hz M1 motor pulley 12	ø79mm / ø104 mm

Motor M3 for the Opening Roller

50 Hz motor pulley 10 x ø118 mm	944 rpm
60 Hz motor pulley 10 x ø100 mm	958 rpm

Production Rate at the Feed Rollers

50/60 Hz chain wheel sprocket 25	10 - 120 kg

Motor M4 for the Feed Rollers

50/60 Hz motor M4	6.4 - 45.2 rpm

7.5 Putting the Material into the Machine

This section contains the information about how to put the waste material correctly onto the feed belt.

The materials that are applicable for processing is shown as follows:

- Sliver from cards, comber, and draw frame
- Noils and filter waste
- Card waste from card flats and filter
- Bale waste from the UNIfloc

The materials that are not applicable for processing is shown as follows:

- Yarn remnants
- Unbroken sliver of all types
- Unopened roving remnants from the flyer and other unwanted material

If a section of the feed belt of card flats waste is only followed by a section of comber sliver, an insufficient degree of mixing will be made. Insufficient mixture in turn has a bad effect on the quality of the yarn.

Prerequisites Make sure that the criteria are obeyed:

✓ The flyer roving yarn must be loosened in advance.

1. With a metering device 1 installed, fill the material between the swing plates 2.

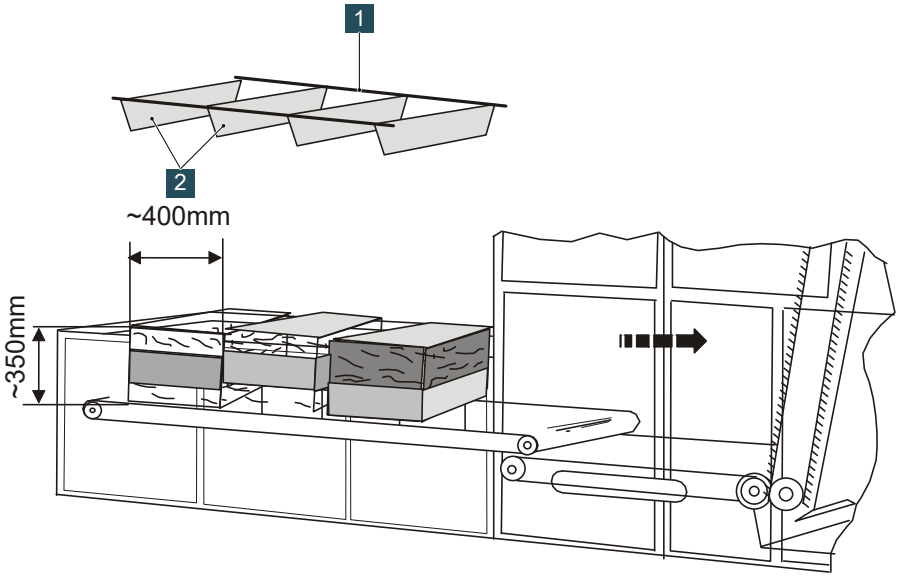


Figure 41: Putting the material into the machine

2. If a metering device 1 is not installed, fill the material in the package.
3. Make sure that the length of the package is not more than 400 mm.
4. Fill the material not higher than the side walls.
5. Put all types of waste material into the package.
   ⇨ A thorough mixing is made.
6. Break the slivers into pieces and put the broken slivers in package shape.
   ⇨ No continuous materials in the shape of carpets are formed.

Result The material is put into the machine.

7.6 Adjusting the Machine Production

The production of the machine is determined by the production of the blowroom and the waste volume to be mixed. The production of the machine can only be adjusted when the other blowroom machines are in operation and have been adjusted.

Example: Production of the blowroom = 400 kg, waste approximately 5 % =20 kg.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The speed of the spiked lattice is set. See *Setting the Production Rate at the Spiked Lattice Drive* ▸ *77*
- ✓ The speed of the feed rollers is set. See *Setting the Production Rate at the Feed Roller Drive* ▸ *83*
- ✓ The distance between the stripping roller and the spiked lattice is adjusted. See *Adjusting the Distance between the Stripping Roller and the Spiked Lattice* ▸ *80*
- ✓ All blowroom machines are in operation.

1. Weigh and prepare the waste.
2. Make sure that the prepared waste is composed of all the wastes produced in the right blending ratio.
3. Correctly fill the feed belt.
4. Start the operation of the feed belt.
5. Make sure that the filling quantity in the mixing chamber is not more than 20 kg.
   ⇨ After a short time, the mixing chamber is full.
6. Wait until the feed belt runs empty up to the reflection light barrier B15.
7. Correctly fill the feed belt with prepared waste.
   ⇨ After about 1 hour, the feed belt runs empty again up to the reflection light barrier.
8. Adjust the production rate if the feed belt doesn't run empty again up to the reflection light barrier.
9. If necessary, after a few days or weeks, the production rate is to be adapted refer to the current general production rate of the spinning mill.

Result The machine production is adjusted.

7.7 Setting Suction Values

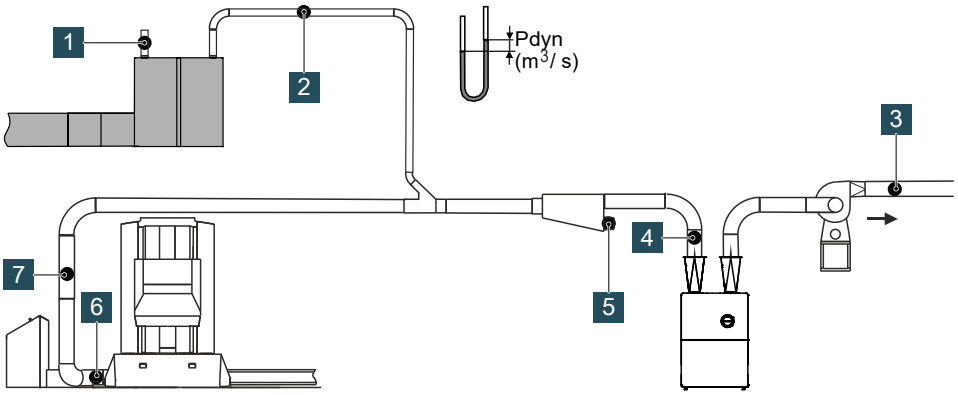


Figure 42: Air properties

1	Flow rate of exhaust air rate at waste opener: 0.15 - 0.20 m³/s Static vacuum of exhaust air at waste opener: - 100 Pa
2	Flow rate for material extraction at waste opener: 0.25 - 0.30 m³/s Static vacuum for material extraction at waste opener: - 200 Pa
3	Flow rate at measuring point in front of material entry point for UNIclean: 0.70 -0.85 m³/s
4	Flow rate at measuring point over dust separator: 1.0 -1.8 m³/s
5	Flow rate at measuring point for exhaust air over dust separator: 40 - 50 % of air volume 4
6	Static vacuum at material exit point of UNIfloc: - 400 Pa
7	Flow rate at material exit point of UNIfloc: 1.00 - 1.20 m³/s

1. Measure the air volume at a straight pipe section.
2. Put each measuring point at a distance of 10 times the pipe diameter in front of, or over a bend, funnel, transition section, etc.
3. If the step 2 is not possible, select the measuring points as shown in the diagram above.
4. Set the suction values for the material transport and exhaust air.

Result The suction values are set.

7.8 Removing the Material Blockages behind the Top Cover Plate

Prerequisites Make sure that the criteria are obeyed:

- ✓ The red stop button is pushed at the blowroom panel or on the machine.
- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the bolts 2.

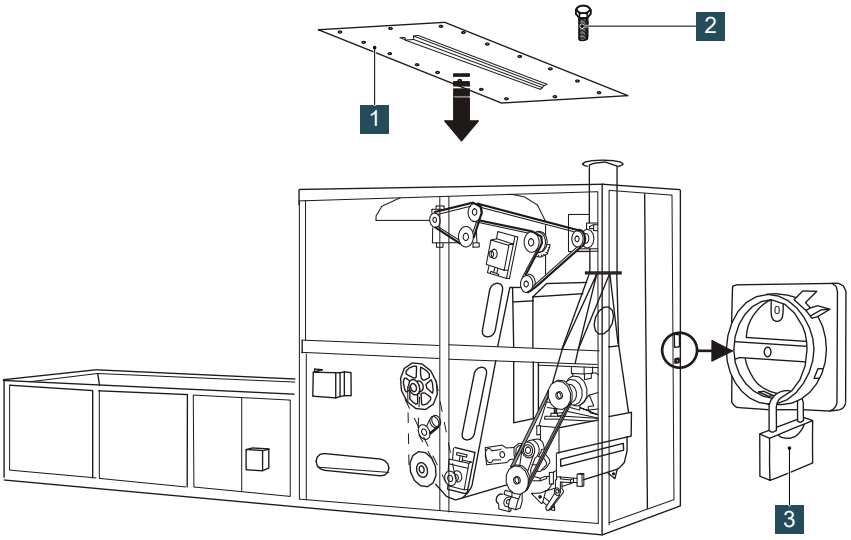


Figure 43: Top cover plate above the machine

2. Remove the cover plate 1.
   ⇨ The stripping roller, the clearer roller, and the take-off roller are available.
3. Remove the material blockages.
4. Install the bolts 2 on the cover plate.
5. Remove the padlock 3.

Result The material blockages are removed behind the top cover plate.

7.9 Removing the Material Blockages from the Feed Roller

The upper window is installed with non-removable safety bolts.

Prerequisites Make sure that the criteria are obeyed:
✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the round window 1 on the left-hand side of the machine.

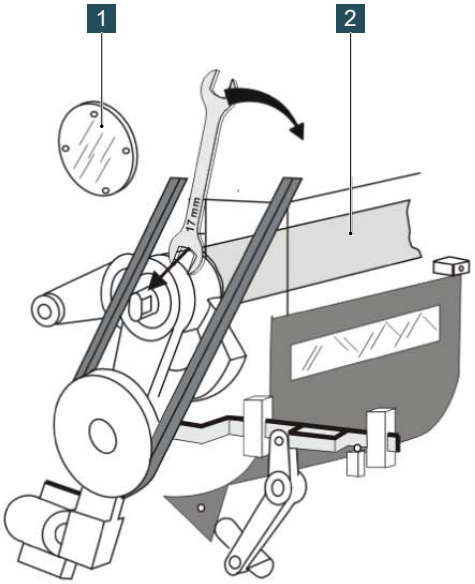


Figure 44: Feed roller

2. Remove the material blockages.
3. Use an open-end wrench of 17 mm to turn the feed roller 2 rearward on the left-hand side of the machine.
4. Remove the material blockages.
5. Install all the covers.
6. Close the doors.
7. Prepare the machine for operation.
8. Start the machine again.

Result The material blockages are removed from the feed roller.

7.10 Removing the Material from the Mixing Chamber

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ Before the operator goes into the mixing chamber, the operator must take the keys.

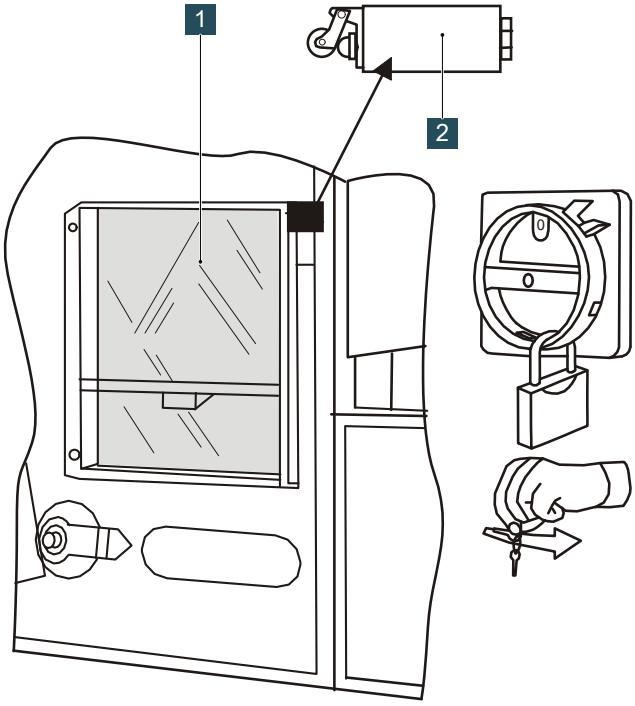


Figure 45: Mixing chamber

1. Open the door to the inside of the mixing chamber 1.
   ⇨ The limit switch 2 is tripped.
2. Remove the material from the mixing chamber.

Result The material is removed from the mixing chamber.

7.11 Setting the Machine into Operation

This chapter contains instructions to set the machine referring to the different machine components.

7.11.1 Feed Belt

This section contains the information about how to set the feed belt.

7.11.1.1 Tightening the Feed Belt

This section contains the information about the correct tension of the feed belt.

Permitted feed belt tension	0.2...0.3%

1. Make 2 marks at a distance of 1000 mm from each other on the untightened belt.

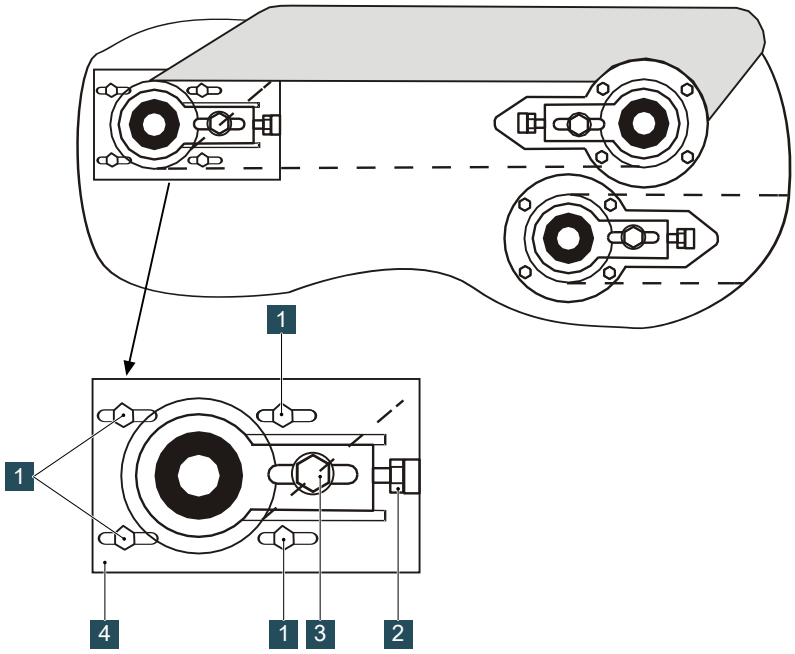


Figure 46: Feed belt

2. Loosen bolts 3 on 2 sides of the feed belt.
3. Tighten the belt equally with the bolts 2 on 2 sides of the feed belt.
4. If necessary, adjust the plates 4 with bolts 1 on 2 sides of the feed belt.
5. Make sure that on the tightened belt, the distance between the 2 marks is 1002 mm.

Result The feed belt is tightened.

7.11.1.2 Aligning the Feed Belt

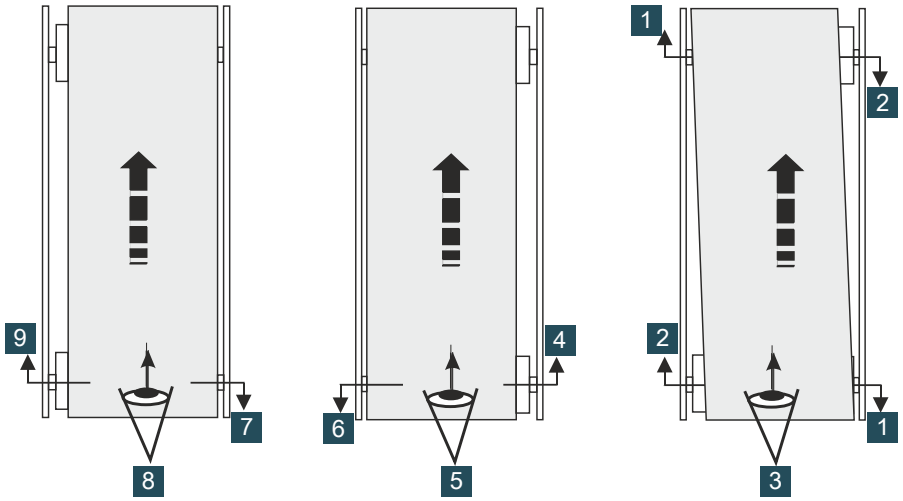


Figure 47: Alignment of the feed belts

1. Make marks of the position of the bearing plates.

2. To prevent the feed belt from being tightened too much, adjust the feed belt from 2 sides.
3. If the feed belt runs right like shown in the figure 8, tighten the position 7 and loosen the position 9.
4. If the feed belt runs left like shown in the figure 5, tighten the position 6 and loosen the position 4.
5. If the feed belt runs transversely like shown in the figure 3, tighten the positions 1 and loosen the positions 2.
6. After 30 minutes, examine the operation of the feed belt.

Result The feed belt is aligned.

7.11.2 Conveyor Belt

This section contains the information about how to set the conveyor belt.

7.11.2.1 Adjusting the Ratio of the Run Time of the Machine Elements

The speed of conveyor belt 7, spiked lattice 6, stripping roller 1, take-off roller 2, and the feed rollers 5 must be matched to one another. Large changes of speed on individual machine elements have an influence on the production.

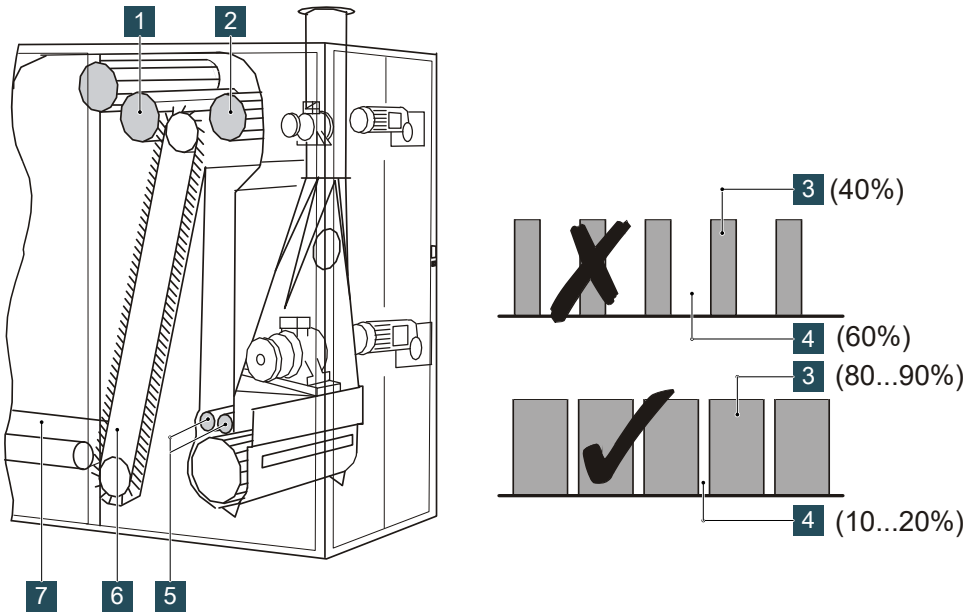


Figure 48: Ratio of the run time of the machine elements

1. If the speed of the spiked lattice 6 is changed, adjust the speed of the feed rollers 5 and the conveyor belt 7 accordingly.
   - ⇨ The run time 3 is 80 % to 90 % of the total operation time.
   - ⇨ The standstill time 4 is 10 % to 20 % of the total operation time.
   - ⇨ The minimum possible stoppages occur.

Result The ratio of the run time of the machine elements is adjusted.

7.11.2.2 Tightening the Conveyor Belt

This section contains the information about the correct tension of the conveyor belt.

Permitted conveyor tension	0.2...0.3%

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Make 2 marks at a distance of 1000 mm from each other on the untightened belt.

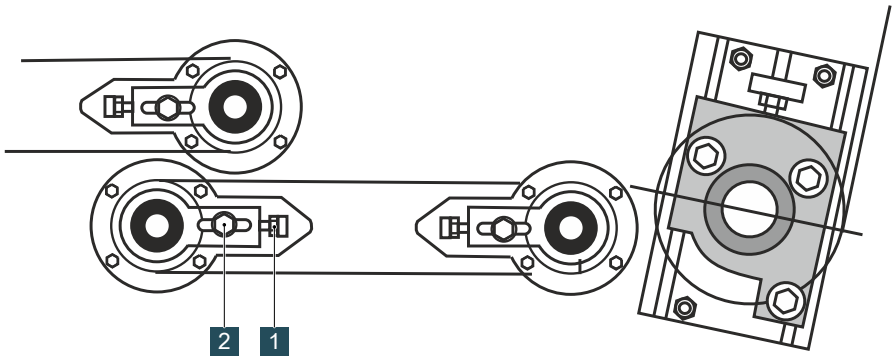


Figure 49: Conveyor belt

2. Tighten the conveyor belt with the bolts 1 and 2.
3. After the conveyor belt is tightened, make sure that the distance between the 2 marks is 1002 mm.

Result The conveyor belt is tightened.

7.11.2.3 Aligning the Conveyor Belt

For the correct operation of the conveyor belt, the conveyor belt is to be aligned.

See *Aligning the Feed Belt* ▸ *74*

7.11.2.4 Adjusting the Distance between the Conveyor Belt and the Spiked Lattice

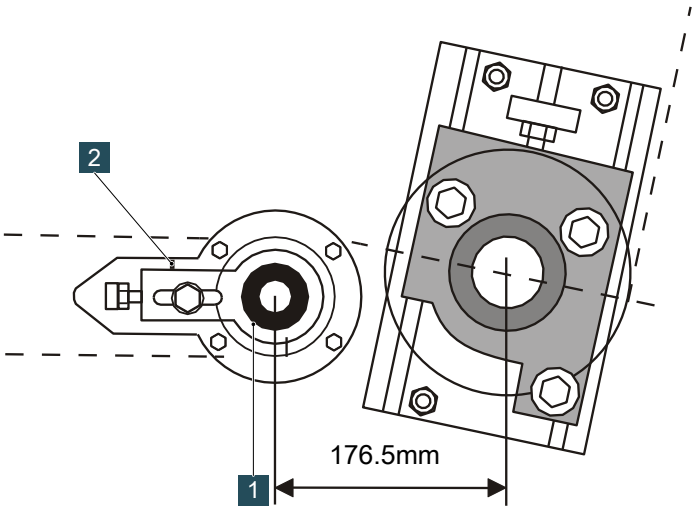


Figure 50: Distance between the conveyor belt and the spiked lattice

1. Examine the distance between the centers of the spiked lattice shaft and the conveyor belt shaft.
   ⇨ The bearing position for the minimum distance is shown through the notch 2.
2. If the minimum distance is less than 176.5 mm, adjust the distance with bearing 1.

Result The distance between the conveyor belt and the spiked lattice is adjusted.

7.11.3 Spiked Lattice Unit

This section contains the information about how to set the spiked lattice unit.

7.11.3.1 Setting the Production Rate at the Spiked Lattice Drive

Referring to the table below, the user can select the chain wheel according to the desired production rate.

Production Rate at the Spiked Lattice	
50/60 Hz chain wheel sprocket 25	0 - 15 kg
50/60 Hz chain wheel sprocket 44	15 - 40 kg
50/60 Hz chain wheel sprocket 56	40 - 120 kg

The production rate is achieved not only by the speed of the spiked lattice, but also by the setting of the stripping rollers. A higher speed of the spiked lattice with a modified distance between the spiked lattice and the stripping roller results in a better loosening of the tufts.

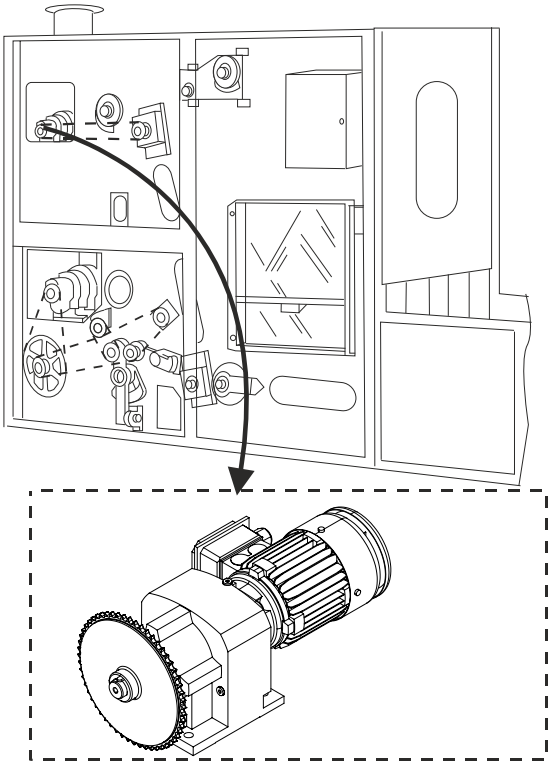


Figure 51: Spiked lattice drive

1. Set the speed of the spiked lattice by the potentiometer at the frequency converter.
2. To adjust the potentiometer, see scale at the display of the frequency converter.
3. Only adjust the potentiometer at the frequency converter when the machine is in operation.

Result The production rate at the spiked lattice drive is set.

7.11.3.2 Tightening the Spiked Lattice

Tension of the Spiked Lattice	
Permitted tension	0.3 %
Axial distance C at 0.0 %	1196.5 mm
Axial distance C at 0.3 %	1232.5 mm

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

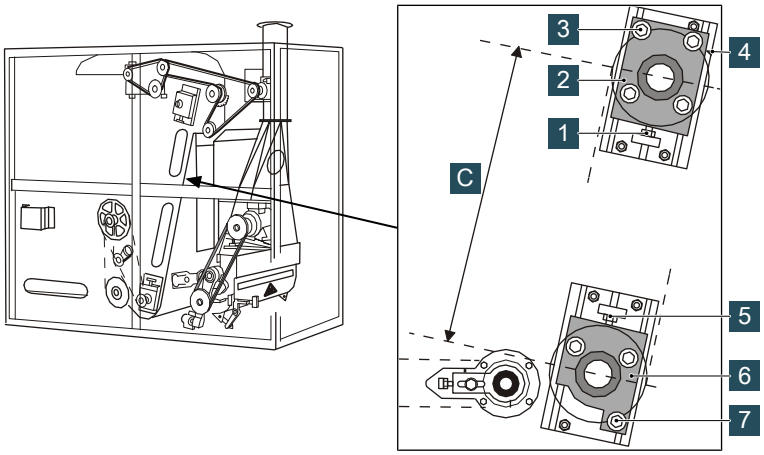


Figure 52: Tension of the spiked lattice

1. Loosen the bolts 3.
2. With the adjusting screw 1, adjust the upper bearing plate 2 on the 2 sides to the notch 4.
3. Loosen the bolts 7.
4. With the adjusting screw 5, adjust the lower bearing plate 6 on the 2 sides to the distance C.
5. After tightening the spiked lattice, make sure that the axial distance C is the same as the distance in the table shown above.
6. Tighten bolts 3 and 7 with a maximum tightening torque of 40 Nm.
7. Make sure that the thread dimension is 12 mm.

Result The spiked lattice is tightened.

7.11.3.3 Adjusting the Edge Rollers

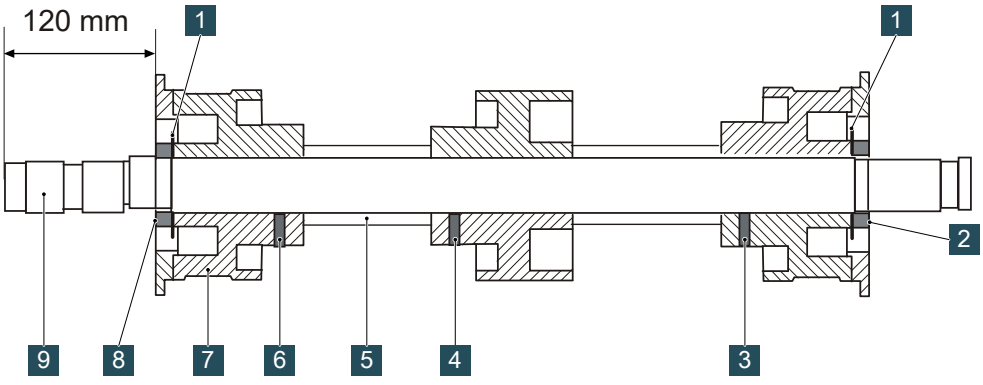


Figure 53: Edge rollers

1. At the shaft 9 of the lower spiked lattice, adjust edge roller 7 to the distance 120 mm.
2. Tighten bolt 6 only slightly.

3. Install the spacers 5 and the remaining guide and edge rollers.
4. Tighten shaft nut 2 slightly.
5. Lock shaft nuts 2 and 8 against one another.
6. Examine the distance of 120 mm.
7. Correct the distance if necessary.
8. Tighten bolts 3, 4 and 6.
9. Attach the shaft nuts 2 and 8 with the circlips 1.

Result The edge rollers are adjusted.

7.11.3.4 Adjusting the Distance between the Stripping Roller and the Spiked Lattice

A larger distance gives a higher production with constant speed of the spiked lattice, but decreased loosening.

For cotton and man-made fibers	Approx. 15 mm

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

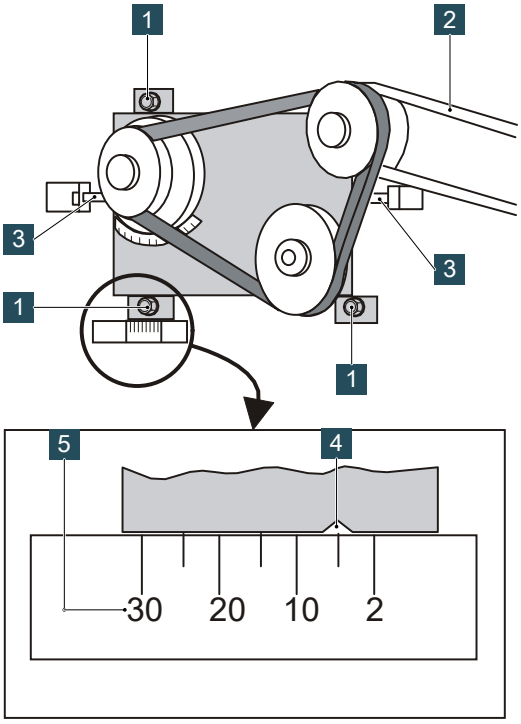


Figure 54: Distance between the stripping roller and spiked lattice

1. Make sure that the adjustment is carried out on the left side and right side of the machine.
2. Loosen the V-belt 2.

3. Loosen bolts 1.
4. Use the bolts 3 to adjust the distance refer to the above table.
5. Read off the value of the distance on the scale 5 at the notch 4.

Result The distance between the stripping roller and the spiked lattice is adjusted.

7.11.3.5 Adjusting the Distance between the Clearer Roller and Stripping Roller

For cotton and man-made fibers	Approx. 6 mm

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

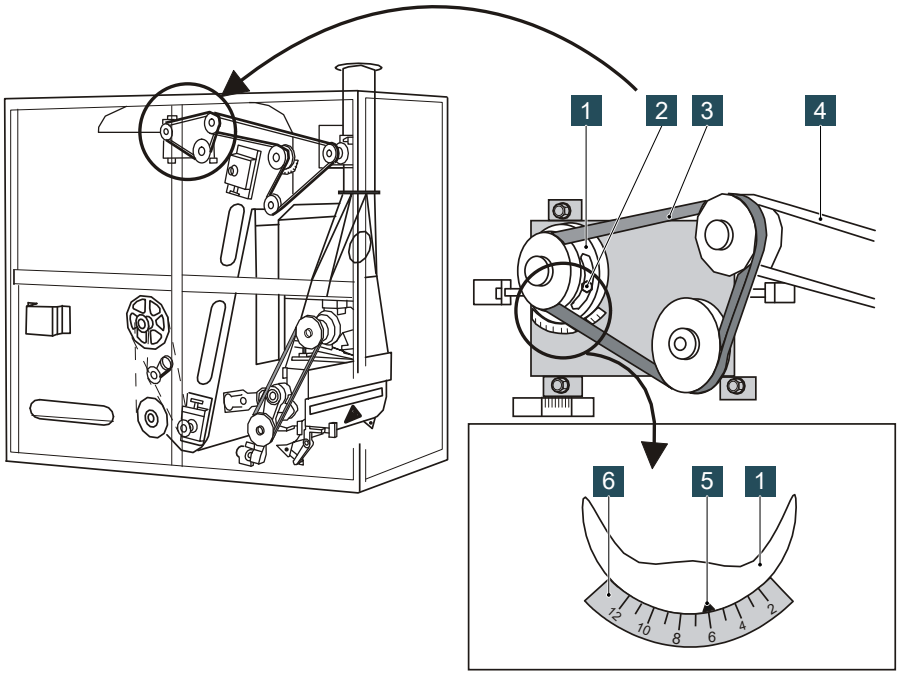


Figure 55: Distance between the clearer roller and the stripping roller

1. Make sure that the adjustment is done on the left side and right side of the machine.
2. Loosen V-belts 3 and 4.
3. Loosen bolts 2.
4. Adjust the notch 5 of the eccentric 1 refer to the above table.
5. Read off the value at the notch 5 on the scale 6.

Result The distance between the clearer roller and the stripping roller is adjusted.

7.11.3.6 Adjusting the Distance between the Take-off Roller and the Spiked Lattice

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

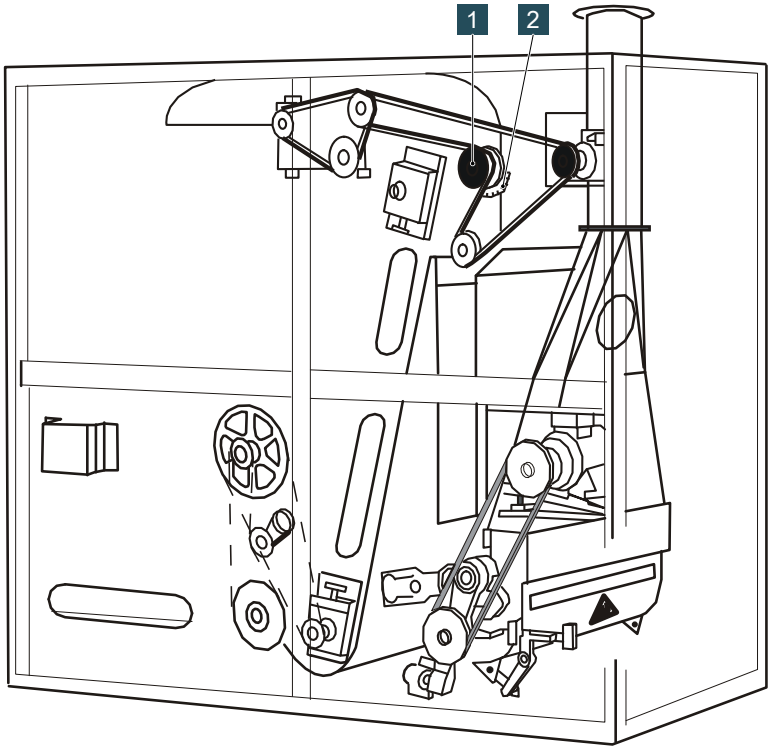


Figure 56: Distance between the take-off roller and the spiked lattice

1. With the eccentric 2, adjust the take-off roller 1 in the same procedure as the clearer roller. See *Adjusting the Distance between the Clearer Roller and Stripping Roller* ▸ *81*

Result The distance between the take-off roller and the spiked lattice is adjusted.

7.11.4 Feed Trunk

This section contains the information about how to set the feed trunk.

7.11.4.1 Setting the Feed Trunk Wall

The setting for the adjustable rear wall 1 influences the filling volume in the feed trunk 2. The opening of the feed trunk needs to be decreased as much as possible to make sure that the material is opened gently.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

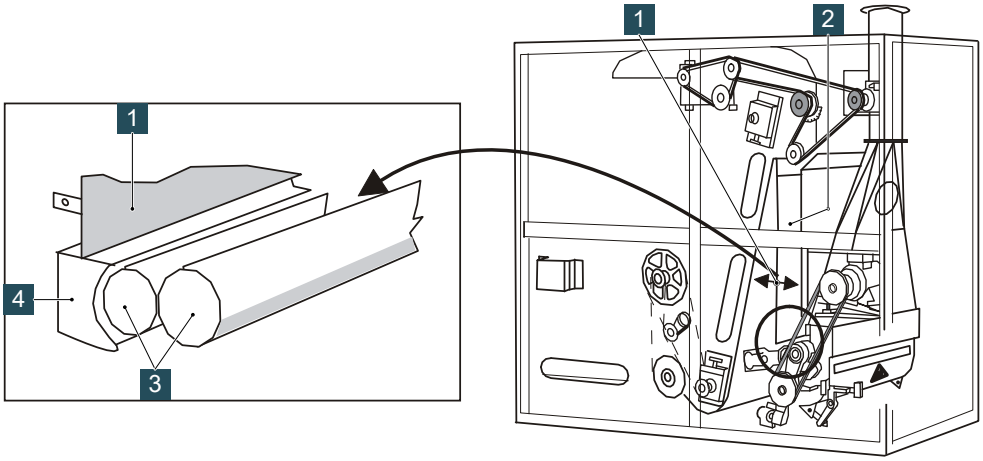


Figure 57: Feed trunk wall

1. Make sure that the adjustable rear wall 1 must be on the inlet crossbar 4.
2. Adjust the feed trunk 2 to the maximum opening.
   ⇨ Smaller degree of opening by the opening roller is achieved, but with constant speed of the feed rollers 3, higher production is made.
3. Adjust the feed trunk 2 to the minimum opening.
   ⇨ Larger degree of opening by the opening roller is achieved, but with constant speed of the feed rollers 3, lower production is made.

Result The feed trunk wall is set.

7.11.5 Opening Unit

This section contains the information about how to set the opening unit.

7.11.5.1 Setting the Production Rate at the Feed Roller Drive

This section contains the information about how to adjust the production rate at the feed roller drive.

Production Rate at the Feed Rollers	
50/60 Hz chain wheel sprocket 25	10 - 120 kg

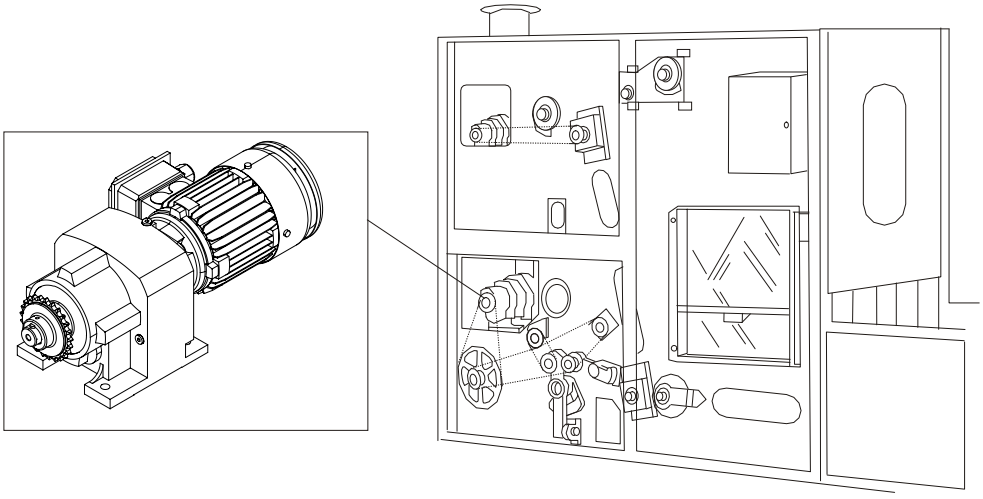


Figure 58: Feed roller drive

1. Adjust the production rate with the potentiometer at the frequency converter.
2. Only adjust the potentiometer when the machine is in operation.

Result The production rate at the feed roller drive is set.

7.11.5.2 Setting the Minimum Distance between the Feed Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

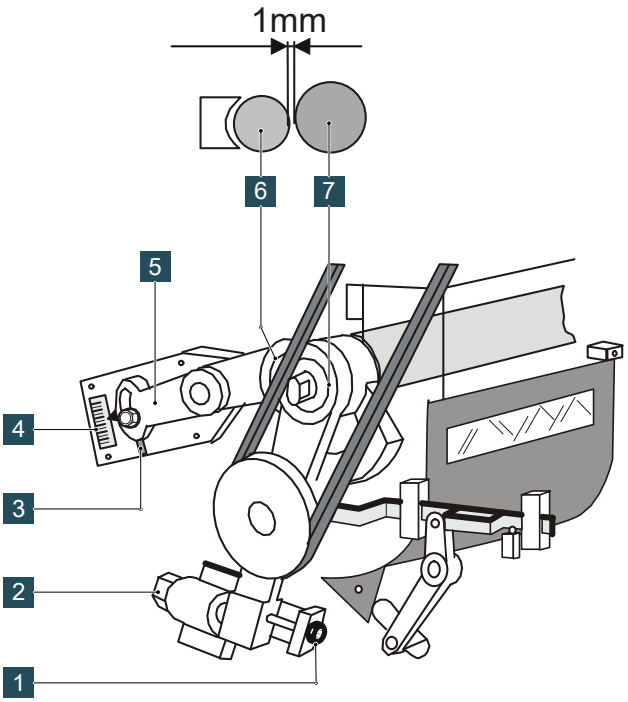


Figure 59: Minimum distance between the feed rollers

1. Move the lever 5 to the position 1 on the scale 4.
2. Screw in bolt 3 fully.
3. Tighten the bolts 3 with the lock nut.
4. Screw in and tighten the bolt 2.
5. Use the bolt 1 to adjust the distance between the feed rollers 6 and 7 to 1 mm.
6. Make sure that the positions of the bolts 1 and 3 is not changed later.

Result The minimum distance between the feed rollers is set.

7.11.5.3 Setting the Minimum Distance between the Feed Roller and the Opening Roller

Feed Roller Ø 60 mm	
Distance A for cotton below 1 1/16 mm	1.0...2.0 mm
Distance A for cotton over 1 1/16 mm	1.5...2.5 mm
Distance A for man-made fibers	2.0...3.0 mm

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

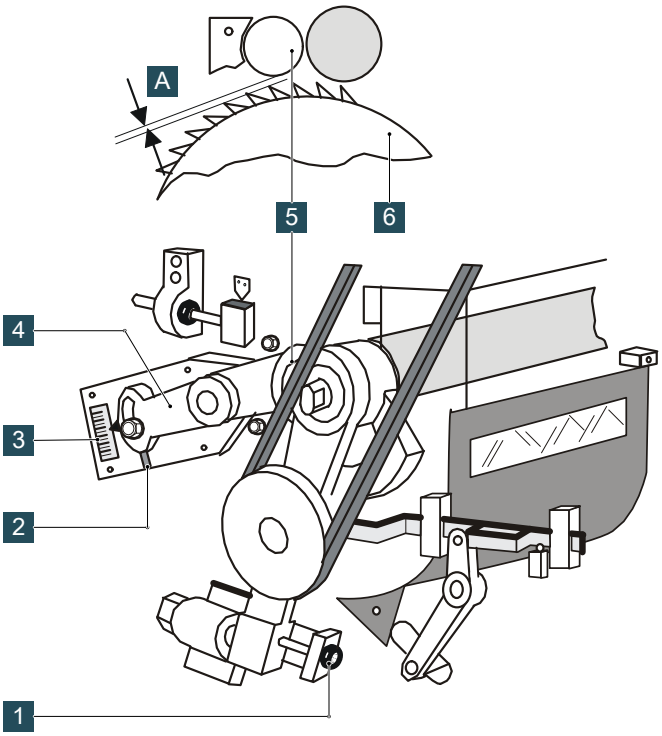


Figure 60: Minimum distance between the feed roller and the opening roller

1. Do not adjust the bolts 1 and 2.

2. Refer to the table above for the desired value of the distance A between the feed roller 5 and the opening roller 6.
3. Move the levers 4 to the desired value on the scale 3 on the 2 sides of the machine.

Result The minimum distance between the feed roller and the opening roller is set.

7.11.6 Material Discharge

This section contains the information about how to set the material discharge.

7.11.6.1 Adjusting the Regulating Flap

This section contains the information on how to clean suction of the material in the delivery unit.

Regulating Flap	
Distance D	10 mm
Suction rate	0.3 m³/s
Vacuum	-200 Pa
Vacuum	-20 mm water column

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

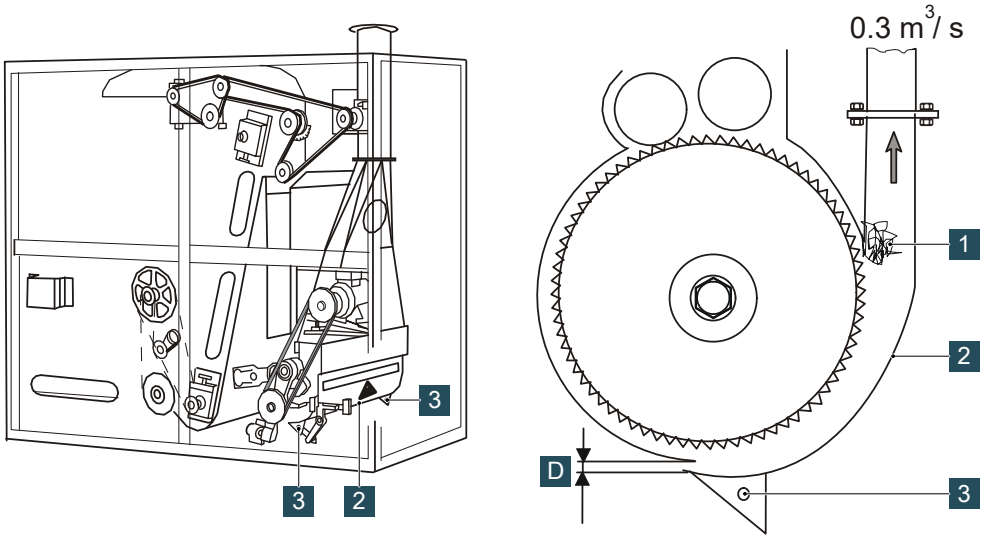


Figure 61: Regulating flap

1. Loosen the bolts 3.
2. Adjust the regulating flap 2 refer to the table above.
3. If the material gets caught at the point 1, increase the distance D.

Result The regulating flap is adjusted.

8 Troubleshooting

This chapter contains information about fault causes and remedies for:

- Faults that have fault codes
- Faults that do not have fault codes
- Material-specific faults

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

8.1 Troubleshooting Personnel

Only Rieter-approved personnel are permitted to do troubleshooting work at the machine.

8.2 Faults without Fault Code

Fault	Cause	Remedy
The material feed LED illuminates red.	Feeding is interrupted.	– Check the feed rollers. – Check the setting of the limit switches. – Check limit switches and the wiring of limit switches.
The material low LED illuminates yellow.	The feed belt is running empty.	– Put the material onto the feed belt. – Check the light beam of the light barrier. – Check the wiring.
The door monitor LED illuminates red.	One of the monitored doors is not closed.	– Close the door. – Check the setting of the limit switches. – Check the wiring. – Check the interlock of the opening roller.

Fault	Cause	Remedy
The motor monitor LED illuminates red.	Motor is overloaded. A motor protection switch has tripped.	– Check which motor protection switch has tripped. – Check the corresponding drive for ease of movement. – Reset the motor protection switch. – Set the motor protection switch according to the electrical circuit diagram.
The mixing chamber is running empty.	The mixing chamber has run empty.	– Check the light barrier on the feed belt. – Check the light beam. – Check the wiring.
The feed trunk is running empty.	The feed trunk has run empty.	– Check the light barrier in the mixing chamber. – Check the light beam. – Check the wiring. – Set the differential pressure switch.

9 Maintenance

This chapter contains information about:

- The cleaning work of the machine
- The lubrication of the machine
- The inspection of the machine

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

9.1 Maintenance Personnel

Only Rieter-approved personnel are permitted to do maintenance work at the machine.

9.2 Interval Specification

The intervals that follow are guide values.

Interval Specification	Duration in 3-Shift Operation
165 operating hours	1 week
330 operating hours	2 weeks
660 operating hours	4 weeks
1 320 operating hours	8 weeks
2 000 operating hours	3 months
4 000 operating hours	6 months
8 000 operating hours	1 year
16 000 operating hours	2 years
24 000 operating hours	3 years
32 000 operating hours	4 years

9.3 Protocol for the Safety Circuit

Each replaced safety device is recorded in the protocol for the safety circuit.

The steps to replace the safety devices are as follows:

1. Identify each safety device in the electrical documentation.
2. To replace a safety device, refer to the operation manual. Replace the related safety devices fully.
3. To do the function test of each replaced safety device, refer to the related description in this chapter.

Example of a protocol for the safety circuit:

Date	Device Tag	Location	Description	Name	Initials
01-01-2015	S8	= SLO + EC1	The emergency stop button is replaced because the red push-button has mechanical damage.	J. Meyer	JM
01-07-2016			A function test of the safety circuit is done during the commissioning.	Field Engineer	FE
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

9.4 Cleaning Table by Cycle

Target group	Cleaning cycle	Additional information	
Operator	Cleaning each 165 h	9.8.1	Cleaning the Belts and the Spiked Lattice
	Cleaning each 2 000 h	9.8.2	Cleaning the Rollers
		9.8.3	Cleaning the V-belts and the Chains

9.5 Lubrication Table by Cycle

Target group	Lubrication cycle	Additional information	
Maintenance Personnel	Lubrication each 2 000 h	9.9.1	Lubricating the Chains
	Lubrication each 8 000 h	9.9.2	Changing the Oil of the Gear Motor
	Lubrication each 20 000 h	9.9.3	Lubricating the Bearings of the Gear Motors

9.6 Inspection Table by Cycle

Target group	Inspection cycle	Additional information	
Inspector	Inspection each 2 000 h	9.10.1	Examining the Belts and the Rollers
	Inspection each 4 000 h	9.10.2	Examining the Spiked Lattice
		9.10.3	Doing a Check of the Gear Motor
	Inspection each 8 000 h	9.10.5	Doing the Function Test of the Safety Devices
	Inspection each 6 months	9.10.4	Charging a Replacement Frequency Converter

9.7 Lubricants

This chapter contains the information about the lubricants for this machine.

Lubricant

ISO VG 320 (CC320) - Mineral Gear Oil

Property	Specifications
Consistency class (DIN 51562)	320
FZG-Test (A/8.3/90 DIN 51354) damage force level	> 13
Operating-temperature range	0 – +100 ℃

Supplier

Lubricant	Supplier	Name
CC320	AGIP	BLASIA 320
	AVIA	AVIA GEAR RSX 320
	BP	ENERGOL GR.XP 320
	ESSO	SPARTAN EP 320
	KLÜBER	KLÜBEROIL GEM 1-320 N
	MOBIL	MOBILGEAR 632
	OPTIMOL	OPTIGEAR BM 320
	SHELL	OMALA 320
	TEXACO	MEROPA 320
	VALVOLINE	EPG 320

9.8 Cleaning Tasks

This chapter contains information about how to clean the machine.

9.8.1 Cleaning the Belts and the Spiked Lattice

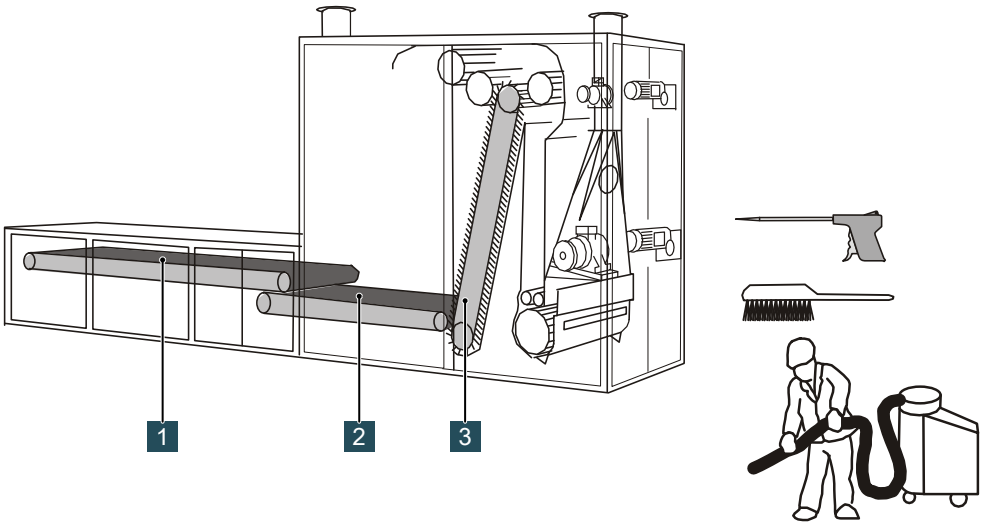


Figure 62: Belts and the spiked lattice

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

✓ A cleaning brush is to be used.
✓ A roller picker is to be used.
✓ An industrial vacuum cleaner is to be used.

1. Clean the feed belt 1.
2. Clean the conveyor belt 2.

3. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Clean the spiked lattice 3.

Result The belts and the spiked lattice are cleaned.

9.8.2 Cleaning the Rollers

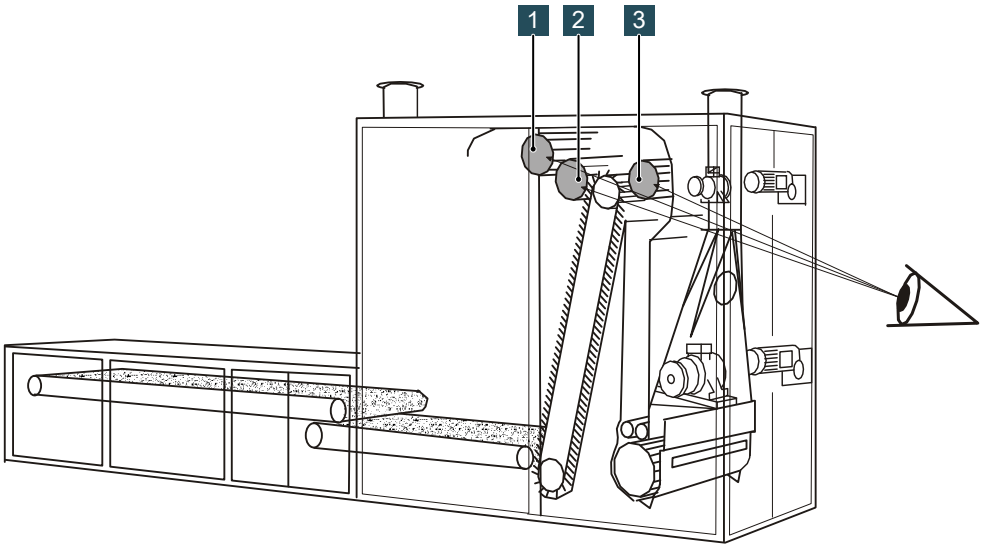


Figure 63: Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Clean the clearer roller 1, the stripping roller 2, and the take-off roller 3.
2. Examine if the clearer roller 1, the stripping roller 2, and the take-off roller 3 run smoothly.

Result The rollers are cleaned.

9.8.3 Cleaning the V-belts and the Chains

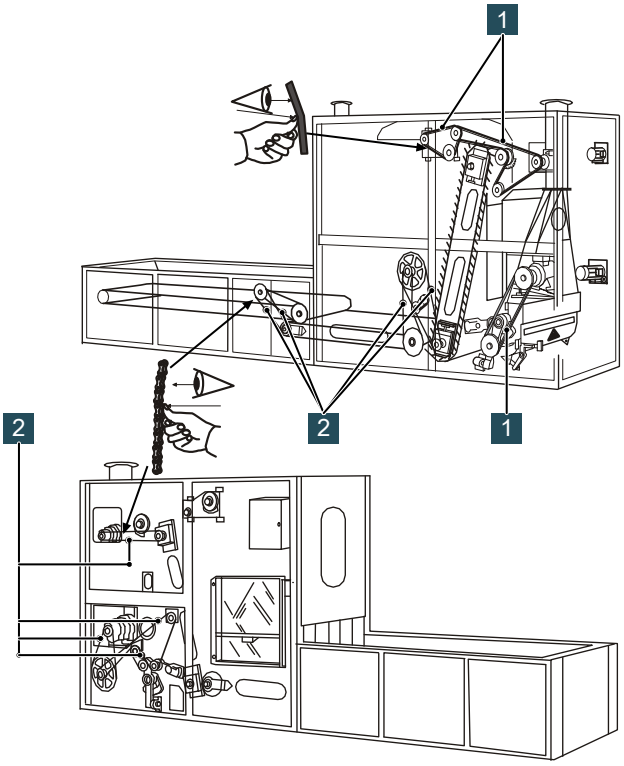


Figure 64: V-belts and the chains

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Clean the V-belts 1 and the chains 2.
2. Examine the condition and the tension of the V-belts 1 and the chains 2.

Result The V-belts and the chains are cleaned.

9.9 Lubrication Tasks

This chapter contains information about the lubrication tasks of the machine.

CAUTION

Incorrect storage and incorrect operation of the lubricants

Irritation or burns to skin, eyes, or respiratory tract

Risk of slipping are spilled

- ▶ Read the safety data sheet.
- ▶ Use safety gloves and safety glasses.
- ▶ Do NOT touch hot lubricants.
- ▶ Clean up the lubricants that flow out.

9.9.1 Lubricating the Chains

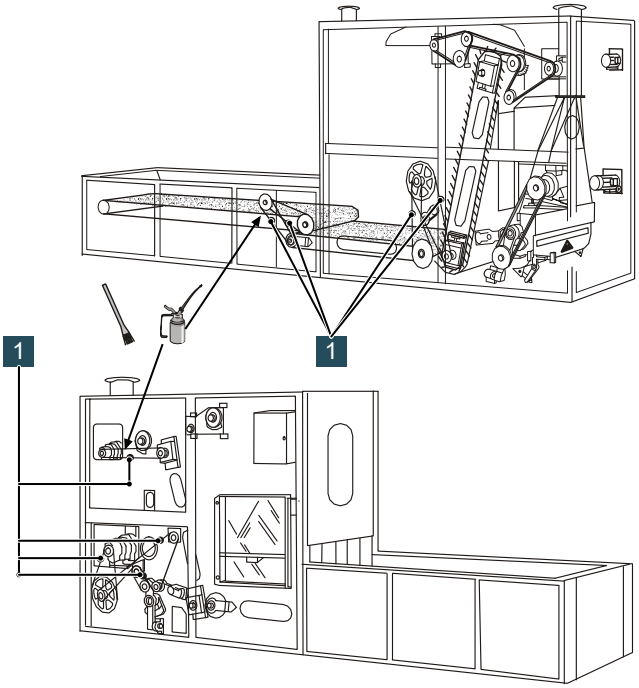


Figure 65: Chains

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The mineral gear oil ISO VG 320 (CC320) is to be used.

1. Use a brush to lubricate the chains 1 lightly.

Result The chains are lubricated.

9.9.2 Changing the Oil of the Gear Motor

The oil change intervals are applicable for usual operating conditions and operating temperatures to a maximum of 80 ℃. The oil change intervals are decreased if bad conditions (operating temperatures higher than 80 ℃, high humidity, aggressive environment and frequent fluctuations in the operating temperature) occur.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Change the oil.
2. If necessary, clean or replace the vent screw.
3. Replace the shaft sealing rings at each oil change.

Result The oil is changed.

9.9.3 Lubricating the Bearings of the Gear Motors

The gear motors are lubricated for life.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.
✓ 0.75 l of ISO VG 220 gear oil is to be used.
✓ A grease gun is to be used.

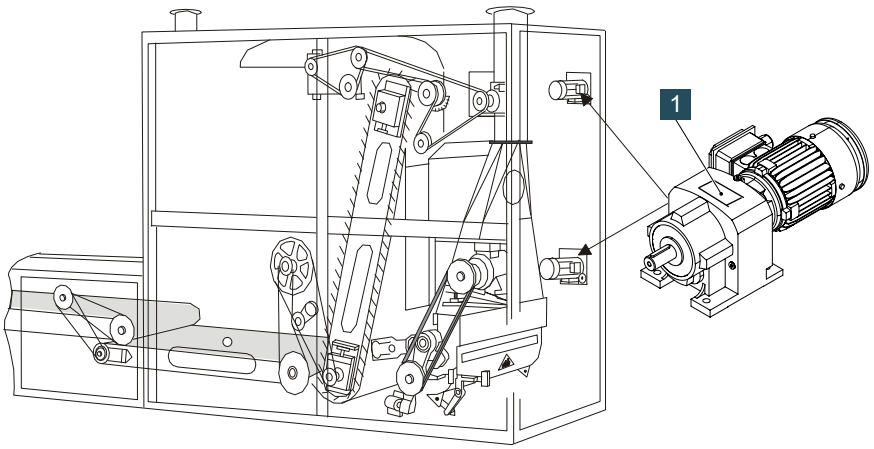


Figure 66: Gear motor at the machine

1. If the gear motors are to be lubricated, obey the volume and the lubricant on the plate 1.
2. Lubricate the bearings in the gear unit.

Result The bearings of the gear motors are lubricated.

9.10 Inspection Tasks

This chapter contains information about the inspection tasks of the machine.

9.10.1 Examining the Belts and the Rollers

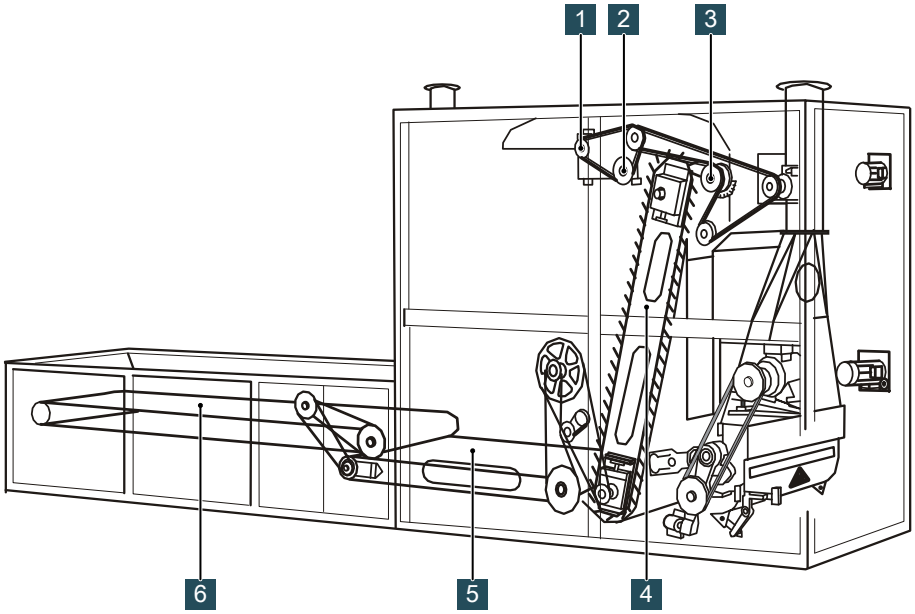


Figure 67: Belts and the rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Examine the feed belt 6, the conveyor belt 5, and the spiked lattice 4 for straight running.
2. If necessary, adjust the feed belt 4, the conveyor belt 3, and the spiked lattice 2 for straight running.
3. Examine the conditions of the clearer roller 1, the stripping roller 2, and the take-off roller 3.

Result The belts and the rollers are examined.

9.10.2 Examining the Spiked Lattice

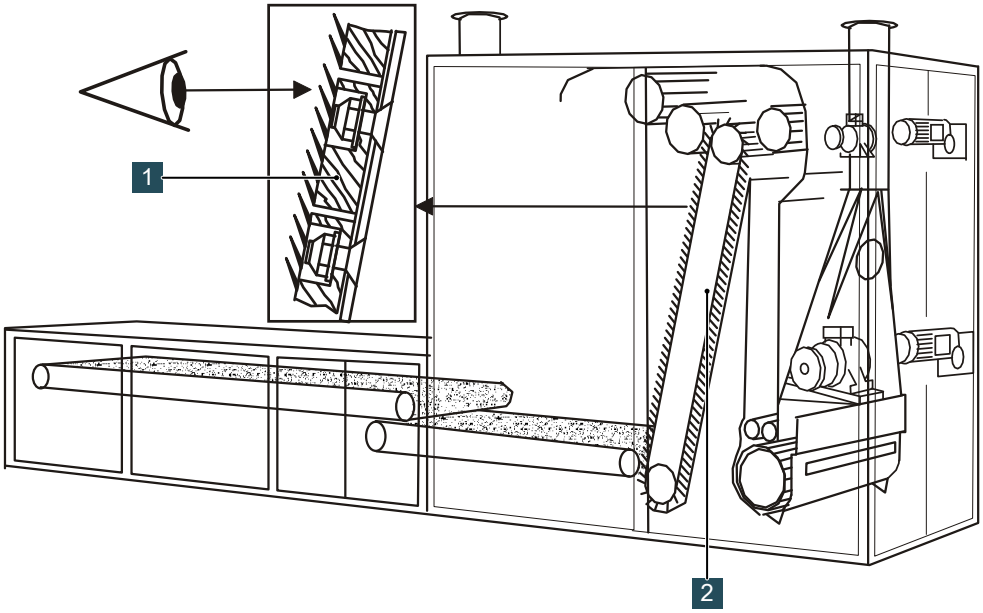


Figure 68: Spiked bars on the spiked lattice

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Examine the spiked lattice 2.
2. Examine the secure fit of the spiked bars 1 on the spiked lattice 2.

Result The spiked lattice is examined.

9.10.3 Doing a Check of the Gear Motor

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Do a visual inspection of the gear motor.
2. Do a check of the gear motor for running noises.
3. Examine the oil level.
4. Do a visual inspection of the hose.

Result The check of the gear motor is done.

9.10.4 Charging a Replacement Frequency Converter

Frequency converters release energy over time. To prevent equipment failure, the frequency converters are to be replaced regularly.

Charged replacement frequency converters are possible to be put into operation immediately.

DANGER

Parts under voltage!

Death or severe injury because of electric shock

- ▶ Set the main switch to the position OFF and padlock the main switch.
- ▶ Make sure that only an approved electrician does the maintenance work or repair work at the frequency converter.
- ▶ Wait for 10 min until the frequency converter voltage becomes 0 V.
- ▶ Do NOT touch the frequency converter during the discharge time of the capacitor.

1. Connect the replacement frequency converters to the power supply each 6 months for minimum 1 hour.

Result The replacement frequency converter is charged.

9.10.5 Doing the Function Test of the Safety Devices

Rieter recommends that a function test of the safety devices is done after each manipulation, service, repair, and modification of the machine.

Doing the Function Test of the Safety Switches

1. Set the main switch to the position ON.
2. Start the machine for operation.
3. Open 1 of the doors 1, which is secured by the safety switch 2.

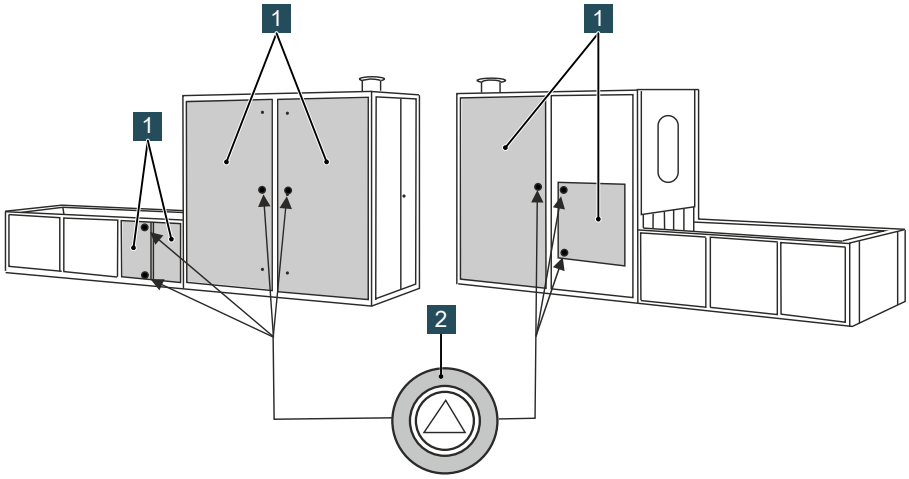


Figure 69: Safety devices at the doors

⇨ If the door monitor LED 3 illuminates and the machine stops, the safety switch 2 works.

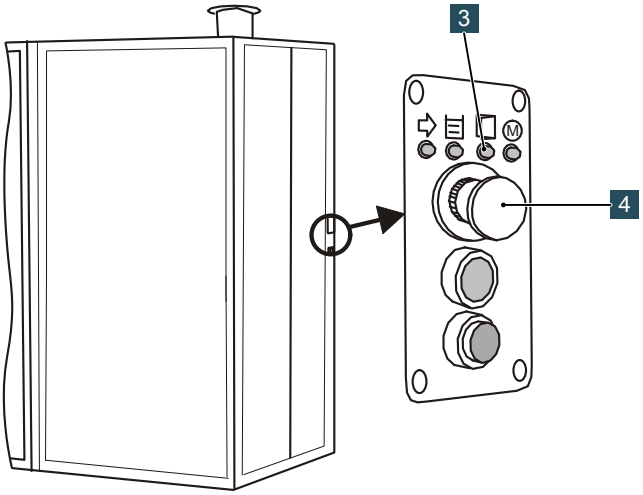


Figure 70: Safety devices

⇨ If the machine does not stop, the safety switch 2 does not work.

4. Close the door.
5. Do the same steps for other doors.

⇨ The function test of the safety switches is done.

Doing the Function Test of the Emergency Stop Button

1. Set the main switch to the position ON.
2. Start the machine for operation.
3. Push the emergency stop button 4.

⇨ If the machine stops, the emergency stop 4 button works.

⇨ If the machine does not stop, the emergency stop button 4 does not work.

4. Release the emergency stop button 4.

⇨ The function test of the emergency stop button is done.

Result The function test of the safety devices is done.

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10 Repair

This chapter contains information about the repair work of the machine.

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

10.1 Repair Personnel

Only Rieter-approved personnel are permitted to do the repair work at the machine.

10.2 Safety Regulations

The information that follows is the safety regulations that have to be obeyed:

- The machine is at a standstill.
- The main switch is set to the position OFF and the main switch is padlocked.

Risks The risks of injury to the personnel occur during the repair work because of:

- Human error
- Not using the personal protective equipment
- Not sufficient visual contact and communication with the personnel in the danger zone
- Electrical short-circuit

DANGER

The safety devices are removed or bypassed!

Death or dangerous injuries

- ▶ Do NOT remove the installed safety devices.
- ▶ Do NOT bypass the installed safety devices.

WARNING

Turning parts!

Risk of hand injury.

- ▶ Stay away from the machine until the machine is at a standstill.

10.3 Repair Work

This chapter contains information about how to repair the defective machine parts.

10.3.1 Replacing the Conveyor Belt

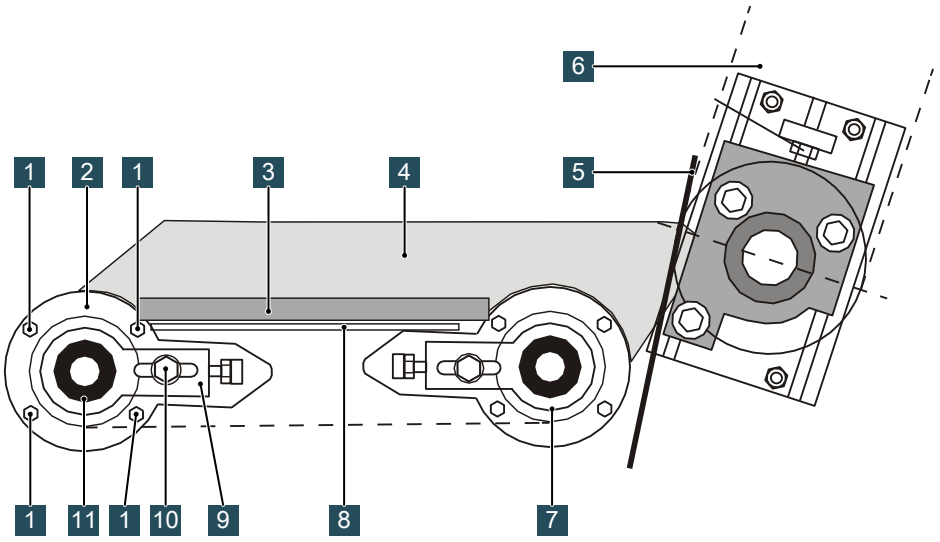

Figure 71: Conveyor belt

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Conveyor Belt

1. To prevent the conveyor belt 4 from damage, put a thin strip of metal 5 between the spiked lattice 6 and the conveyor belt 4.
2. Loosen the conveyor belt 4.
3. Remove the belt covers 3.
4. Remove the slide plate 8 on the inside of the conveyor belt 4.
5. Loosen the adjusting screws 11 on the ball bearings.
6. Remove the bolt 10.
7. Remove the bearing 9.
8. Remove the nuts 1 and the plate 2 on 1 side.
9. Pull out the shaft to the side.
10. To remove the roller 7, do like the steps 5 to 9.
11. Pull out the conveyor belt 4.

    ⇨ The conveyor belt is removed.

Installing the Conveyor Belt

1. Roll out the conveyor belt 4.
2. Install the slide plate 8 on the inside of the conveyor belt 4.
3. Install the shaft.
4. Use the nuts 1 to install the plate 2 on 1 side.

5. Use the bolt 10 to install the bearing 9.
6. Tighten the adjusting screws 11 on the ball bearings.
7. To install the roller 7, do like the steps 4 to 7.
8. Install the belts covers 3.
9. Remove the thin strip of metal 5.
10. Tighten the newly installed belt. See *Tightening the Conveyor Belt* ▸ *76*
11. Align the newly installed belt. See *Aligning the Conveyor Belt* ▸ *76*

    ⇨ The conveyor belt is installed.

Result The conveyor belt is replaced.

10.3.2 Replacing the Spiked Bar

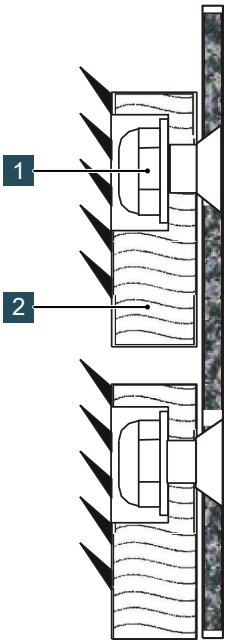

Figure 72: Spiked bars

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- Do not stay below the machine subassemblies that have sharp objects.
- To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- During the repair work, use chain barriers to prevent access to the work area.

Removing the Spiked Bar

1. Empty the machine.
2. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Remove the nut 1.
3. Remove the spiked bar 2.
   ⇨ The spiked bar is removed.

Installing the Spiked Bar

Thread dimension	5 mm
Tightening torque	Max. 2.5 Nm

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Use the nut 1 to install the spiked bar 2.
2. Refer to the table above to tighten the nut 1.
   ⇨ The spiked bar is installed.

Result The spiked bar is replaced.

10.3.3 Replacing the Spiked Lattice

The spiked lattice weighs 30 kg. The top roller weighs 47 kg. The bottom roller weighs 35 kg.

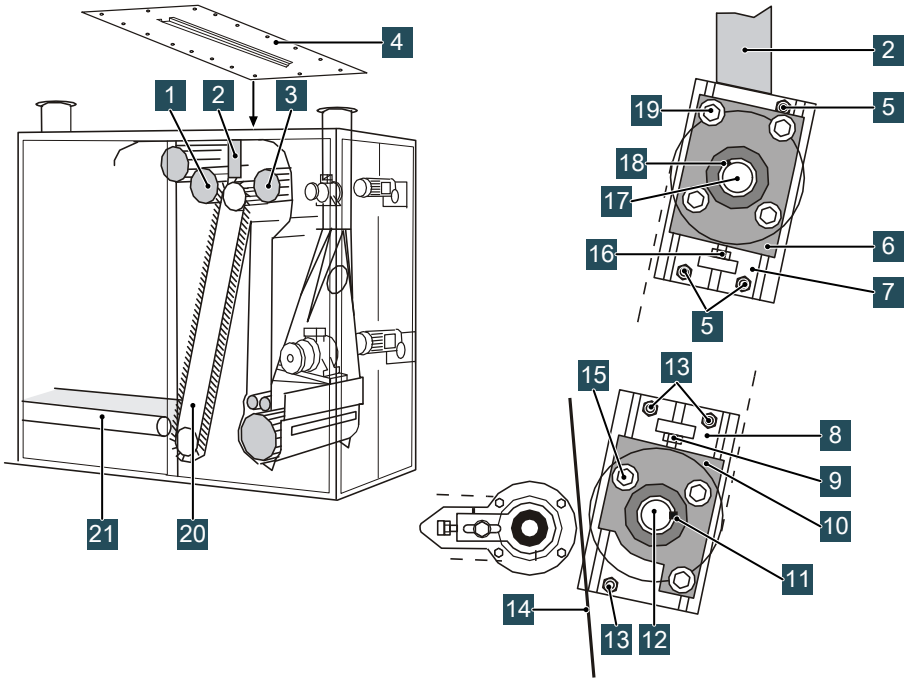

Figure 73: Spiked lattice

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

Removing the Spiked Lattice

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** To protect the conveyor belt 21, put a thin strip of metal 14 between the spiked lattice 20 and the conveyor belt 21.

2. Remove the middle door struts 2 on the left side and the right side.
3. Remove the top cover plate 4.
4. Remove the chain and the sprockets.
5. Loosen the V-belts of the stripping roller 1 and the take-off roller 3.
6. Record the distance between the stripping roller 1 and the take-off roller 3.
7. Move the stripping roller 1 and the take-off roller 3 to the certain position.
   ⇨ The distance between the stripping roller 1 and the take-off roller 3 is the widest.
8. Use the bolts 9 to loosen the spiked lattice 20.
9. Loosen the adjusting screws 11 on the inner ring of the ball bearing.
10. Remove the nuts 15 and the plate 10 to the side.
11. Remove the nuts 13 and the plate 8 to the side.
12. Move out the bottom roller 12 to the side.
13. Make a mark of the position of the plate 7 on the 2 sides.
14. Remove the inner supporting brackets on the 2 sides.
15. Loosen the adjusting screws 18 on the inner ring of the ball bearing.
16. Remove the nuts 19 and the plate 6 to the side.
17. Remove the nuts 5 and the plate 7 to the side.
18. Do not loosen the bolt 16.
19. Lift and move out the top roller 17 together with the spiked lattice.
    ⇨ The spiked lattice is removed.

Installing the Spiked Lattice

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Lower and move the top roller 17 together with the new spiked lattice into the machine.
2. Use the nuts 5 to install the plate 7 at the marked position.
3. Use the nuts 19 to install the plate 6.
4. Tighten the nuts 19 with a maximum tightening torque of 40 Nm.
5. Tighten the adjusting screws 18 on the inner ring of the ball bearing.
6. Install the inner supporting brackets on the 2 sides.
7. Move in the bottom roller 12.
8. Use the nuts 13 to install the plate 8.
9. Use the nuts 15 to install the plate 10.
10. Tighten the nuts 15 with a maximum tightening torque of 40 Nm.
11. Tighten the adjusting screws 11 on the inner ring of the ball bearing.

12. Use the bolts 9 to tighten the new spiked lattice. See *Tightening the Spiked Lattice* ▸ *78*
13. Remove the thin strip of metal 14.
14. Adjust the distance between the stripping roller 1 and the take-off roller 3.
    ⇨ The adjusted distance is the initial recorded distance.
15. Tighten the V-belts of the stripping roller 1 and the take-off roller 3.
16. Make sure that the double V-belt 22 is correctly put on the take-off roller pulley 23.

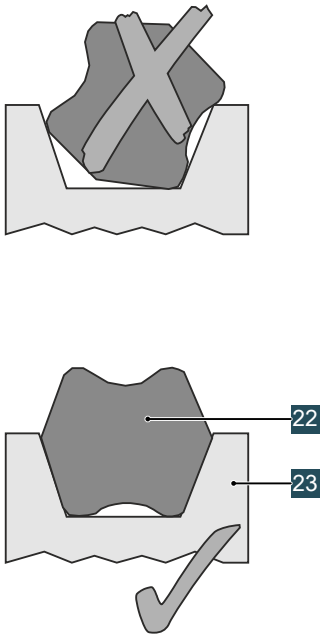

Figure 74: Correct position of the double V-belt on the take-off roller pulley

17. Install the chain and the sprockets.
18. Install the top cover plate 4.
19. Install the middle door struts 2 on the left side and the right side.
    ⇨ The spiked lattice is installed.

Result The spiked lattice is replaced.

10.3.4 Replacing the Stripping Roller

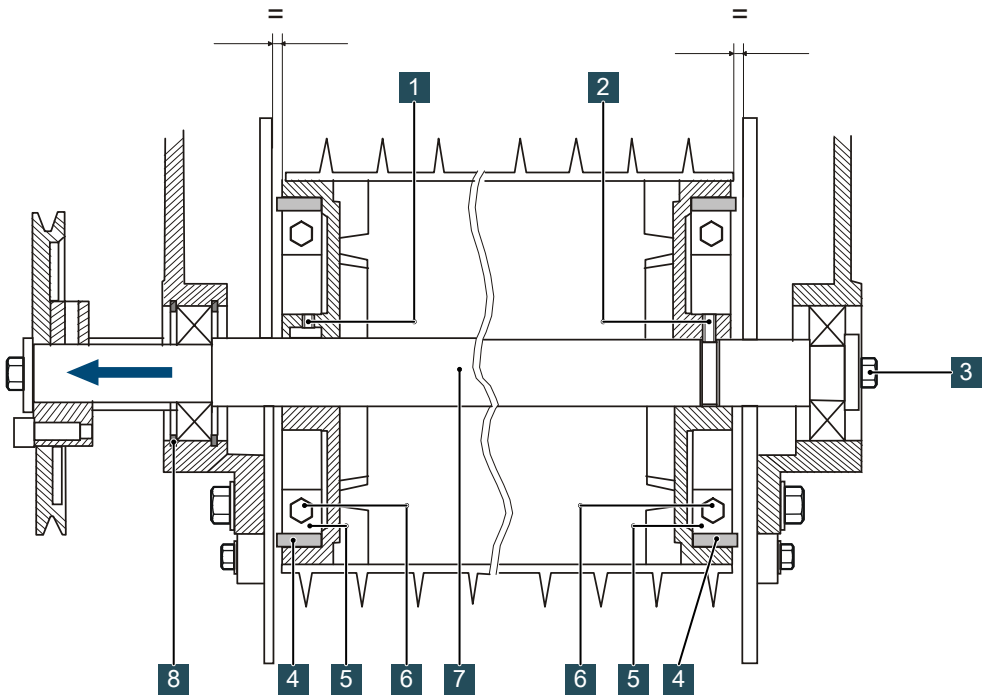

Figure 75: Stripping roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

Removing the Stripping Roller

1. Remove the middle door struts.

2. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Remove the top cover plate.
3. Remove the V-belt.
4. Make a mark of the distance between the stripping roller and the clearer roller.
5. Adjust the distance between the stripping roller and the clearer roller.
   ⇨ The distance between the stripping roller and the clearer roller is the widest.
6. Loosen the bolts 1 and 2.
7. Use the ropes or the belts to support the stripping roller on the 2 sides.
8. Remove the bolts 3 and washers.
9. Remove the bolts 6.
10. Remove the locking ring 8.
11. Remove the shaft 7 in accordance with the arrow direction.
12. Remove the V-belt pulley.
13. Move out the stripping roller from above.
    ⇨ The stripping roller is removed.

Installing the Stripping Roller

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp obejects.** Install the new stripping roller.
2. Install the shaft 7 in the opposite direction of the arrow.
3. Install the V-belt pulley.
4. Install the locking ring 8.
5. Make sure that the seals 4 protrude 2.5 mm above the edge of the stripping roller.
6. Make sure that the seals 4 are secured with the clamping rings 5.
7. Install the bolts 6.
8. Install the bolts 3 and washers.
9. Tighten the bolts 1 and 2.
10. Adjust the clearance of the stripping roller equally on the 2 sides.
11. Adjust the distance between the stripping roller and the clearer roller to the marked position.
12. Install the V-belt.
13. Install the top cover plate.
14. Install the middle door struts.
    ⇨ The stripping roller is installed.

Result The stripping roller is replaced.

10.3.5 Replacing the Clearer Roller

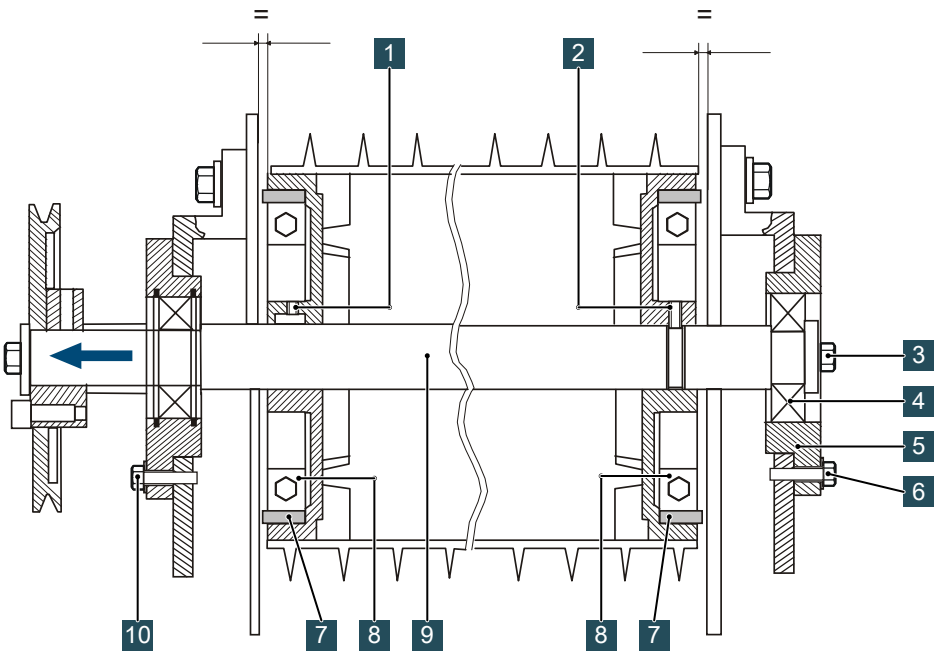

Figure 76: Clearer roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

Removing the Clearer Roller

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Remove the top cover plate.
2. Remove the V-belt.
3. Make a mark of the distance between the stripping roller and the clearer roller.
4. Adjust the distance between the stripping roller and the clearer roller.
   ⇨ The distance between the stripping roller and the clearer roller is the widest.
5. Use a 4 mm wrench to loosen the bolts 1 and 2.
6. Use the ropes or the belts to support the clearer roller on the 2 sides.
7. Remove the bolts 3 and washers.
8. Remove the bolts 6.
9. Pull off the eccentric 5 and the ball bearing 4.
10. Remove the bolts 10.
11. Remove the shaft 9 and the eccentric in accordance with the arrow direction.
12. Remove the V-belt pulley.
13. Move out the clearer roller from above.
    ⇨ The clearer roller is removed.

Installing the Clearer Roller

1. **WARNING! Sharp obejcts! Risk of severe injuries because of sharp objects.** Install the new clearer roller.
2. Install the shaft 9 and the eccentric in the opposite direction of the arrow.
3. Install the V-belt pulley.
4. Make sure that the seals 7 protrude 2.5 mm above the edge of the clearer roller.
5. Make sure that the seals 7 are secured with the clamping rings 8.
6. Install the bolts 10.
7. Install the eccentric 5 and the ball bearing 4.
8. Install the bolts 6.
9. Install the bolts 3 and washers.
10. Use a 4 mm wrench to tighten the bolts 1 and 2.
11. Adjust clearance of the clearer roller equally on the 2 sides.
12. Adjust the distance between the stripping roller and the clearer roller to the marked position.
13. Install the V-belt.

14. Install the top cover plate.
    ⇨ The clearer roller is installed.

Result The clearer roller is replaced.

10.3.6 Replacing the Take-off Roller

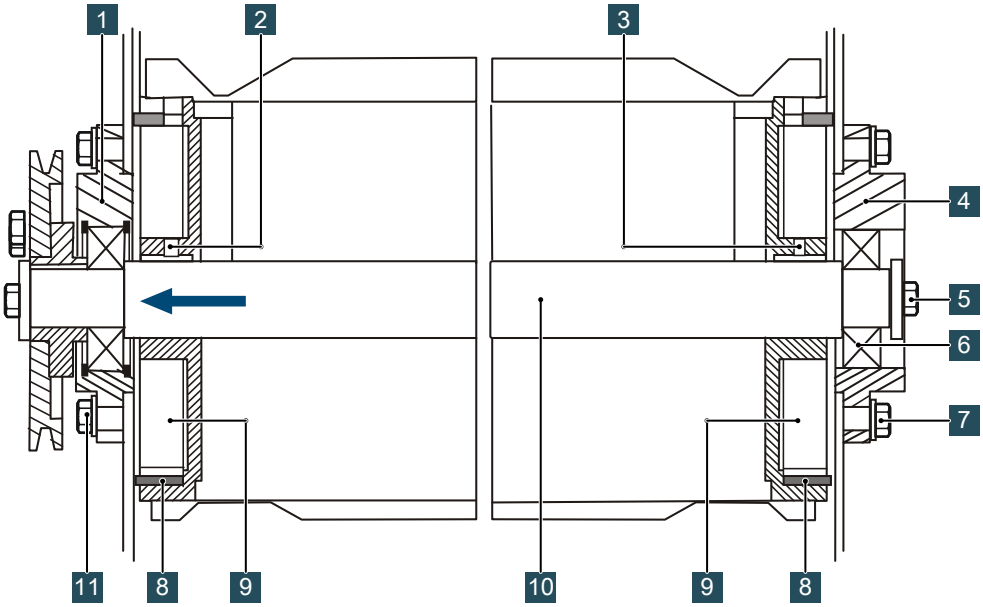

Figure 77: Take-off roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Take-off Roller

1. Remove the top cover plate.
2. Remove the V-belt.
3. Make a mark of the distance between the take-off roller and the spiked lattice.
4. Move the take-off roller to the widest position at the eccentrics 1 and 4.
5. Use a 4 mm wrench to loosen the bolts 2 and 3.
6. Use the ropes or the belts to support the take-off roller on the 2 sides.
7. Remove the bolts 5 and the washer.
8. Remove the bolt 7.
9. Pull off the eccentric 4 and the ball bearing 6.
10. Remove the bolt 11.
11. Remove the shaft 10 and the eccentric 1 in accordance with the arrow direction.

12. Remove the V-belt pulley.
13. Move out the take-off roller from above.
    ⇨ The take-off roller is removed.

Installing the Take-off Roller

1. Install the new take-off roller.
2. Install the shaft 10 and the eccentric 1 in the opposite direction of the arrow.
3. Install the V-belt pulley.
4. Make sure that the seals 8 protrude 2.5 mm above the edge of the take-off roller.
5. Make sure that the seals 8 are secured with the clamping rings 9.
6. Install the bolt 11.
7. Install the eccentric 4 and the ball bearing 6.
8. Install the bolt 7.
9. Install the bolts 5 and the washer.
10. Use a 4 mm wrench to tighten the bolts 2 and 3.
11. Adjust the clearance of the take-off roller equally on the 2 sides.
12. Adjust the distance between the take-off roller and the spiked lattice to the marked position.
13. Make sure that the double V-belt is correctly installed again. See *Replacing the Spiked Lattice ▸ 106*
14. Install the top cover plate.
    ⇨ The take-off roller is installed.

Result The take-off roller is replaced.

10.3.7 Replacing the Feed Rollers

The 80-mm-diameter feed roller weighs 28 kg. The 60-mm-diamter feed roller weighs 15 kg.

The feed rollers are possible to be removed on the left-hand side or the right-hand side.

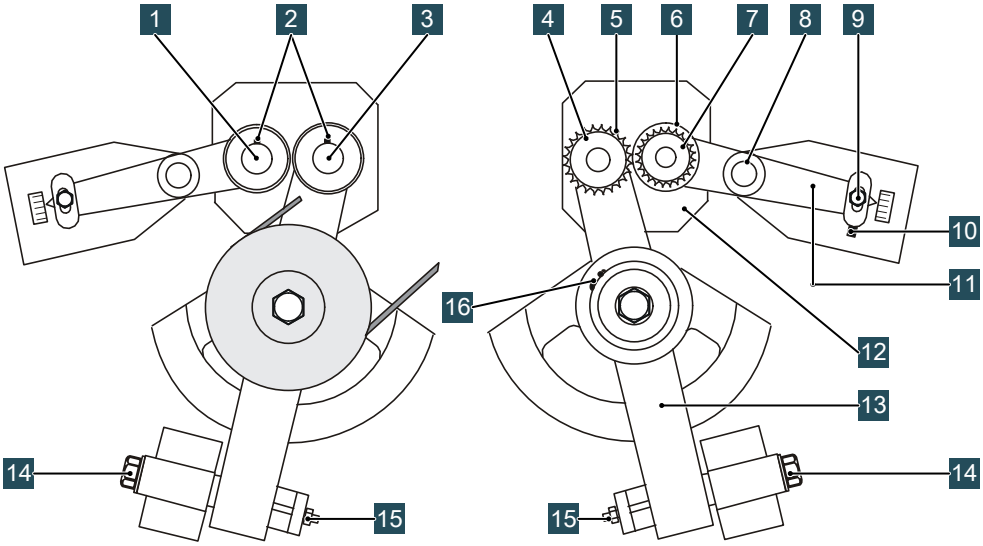

Figure 78: Feed rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Feed Rollers

1. Put a 1 mm thick piece of cardboard between the opening roller and the feed rollers.
2. Loosen the adjusting screws 2 on the inner ring of the ball bearing.
3. Use the bolts 14 to release the compression springs on the 2 sides.
4. Do not adjust the stop bolt 15.
5. Remove the round window above the feed rollers.
6. Remove the chains and sprockets 4 and 7.
7. Remove the locking ring 16 and the bolt 5.
8. Remove the lever 13.
9. Record the position of the lever 13.
10. Remove the bolt 6, the locking ring 8, and the nut 9.
11. Do not adjust the stop bolt 10.
12. Remove the lever 11 and the plate 12.
13. Carefully move out the feed rollers 1 and 3 to the right.

    ⇨ The feed rollers are removed.

Installing the Feed Rollers

1. Carefully move in the feed rollers 1 and 3.
2. Install the plate 12.

3. To install the lever 11, use the bolt 6, the locking ring 8, and the nut 9.
4. Use the locking ring 16 and the bolt 5 to install the lever 13 in accordance with the recorded position.
5. Install the chains and the sprockets 4 and 7.
6. Install the round window above the feed rollers.
7. Use the bolts 14 to tighten the compression springs on the 2 sides.
8. Tighten the adjusting screws 2 on the inner ring of the ball bearing.
9. Remove the cardboard.
10. If necessary, adjust the distances between the feed rollers. See *Setting the Minimum Distance between the Feed Rollers* ▸ *84*
11. If necessary, adjust the distance between the feed rollers and the opening roller. See *Setting the Minimum Distance between the Feed Roller and the Opening Roller* ▸ *85*

    ⇨ The feed rollers are installed.

Result The feed rollers are replaced.

10.3.8 Replacing the Opening Roller

The weight of the opening roller is approximately 72 kg.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ An installation board is to be used.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

Removing the Opening Roller

1. Make a mark of the position of the regulating flap 4.

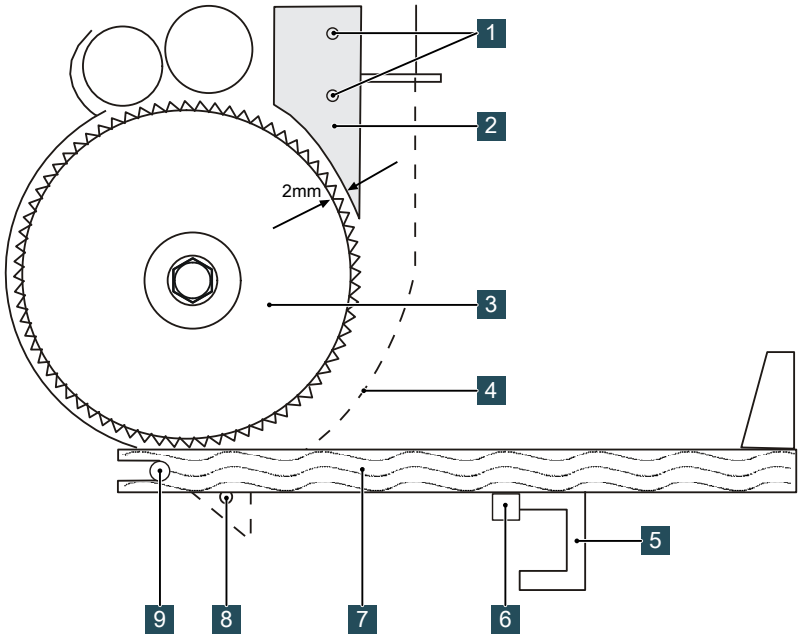

Figure 79: Opening roller

2. Remove the bolts 8 on the 2 sides.
3. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Move up the regulating flap 4.
4. To avoid the damage and the scratches to the gusset 2, put a piece of cardboard between the opening roller 3 and the gusset 2.
5. Remove the bolts 1 and the gusset 2.
6. Put the installation board 7 between the side panels.
7. Push the installation board 7 onto the studs 9.
8. Make sure that the cam 6 is behind the crossbar 5.
9. Remove the V-belt and the V-belt pulley 17.

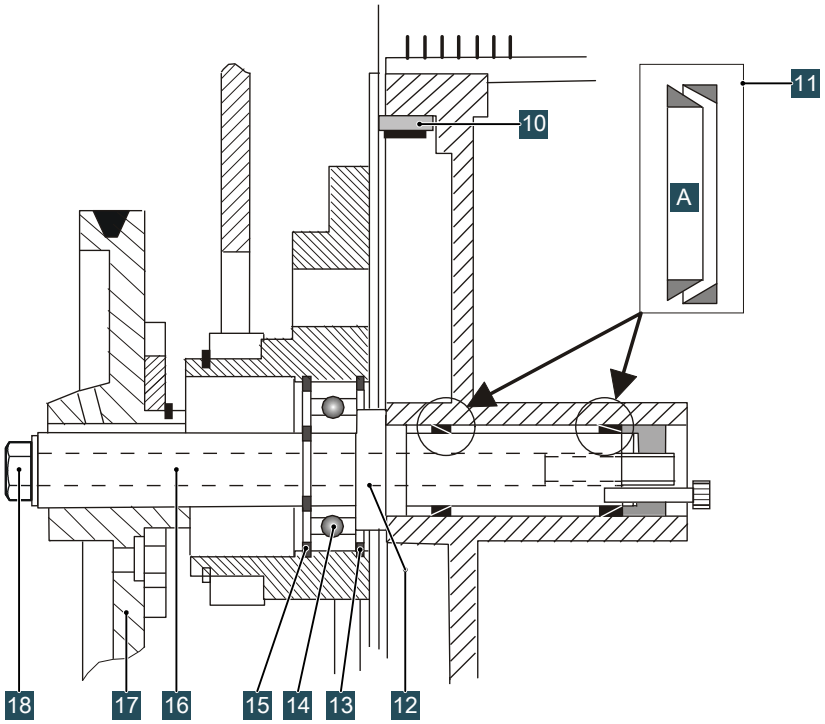

Figure 80: Shaft journal of the opening roller

10. Move out the bolt 18 by approximately 6 mm.
11. Lightly tap the bolt 18 to loosen the tensioning elements 11.
12. Remove the locking ring 15.
13. Pull out the shaft journal 16.
14. Carefully roll the opening roller 3 onto the installation board 7.
    ⇨ The opening roller is removed.

Installing the Opening Roller

Thread dimension	2 x 16 mm
Tightening torque	130 Nm

1. Use a clean cloth to clean the shaft journal 16 and bearing bores.
2. Do not lubricate the shaft journal 16.
3. Push the sealing strips 10 inwards.
4. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Put the opening roller 3 onto the installation board 7.
5. Observe the position of the teeth of the opening roller 3.
6. Carefully roll the opening roller 3 parallel into the machine.
7. Push in the shaft journal 16.
    ⇨ The ball bearing 14 left touches the locking ring 13.

⇨ The journal collar 12 touches the opening roller 3.

8. Install the locking ring 15 on the left.
9. Adjust the clearance of the opening roller 3 equally on the 2 sides.
10. Use the bolt 18 to tighten the tensioning elements 11 in accordance with the table above.
11. If new tensioning elements are necessary to be installed, see A for the correct position.
12. Remove the piece of cardboard.

    ⇨ The opening roller is installed.

Result The opening roller is replaced.

10.3.9 Replacing the Clothing of the Opening Roller

Grooves are to be machined cleanly and accurately. No lubricants are to be used because the lubricants will be slung off when the opening roller is running, and thus the fiber will stick to the opening roller. Unsatisfactory polishing work also causes fibers to stick to the opening roller.

The clothing wires mustn't have sharp edges at the foot end. If not, the installation of the clothing will be difficult.

The clothing wires are only caulked in the grooves, and are not welded or soldered.

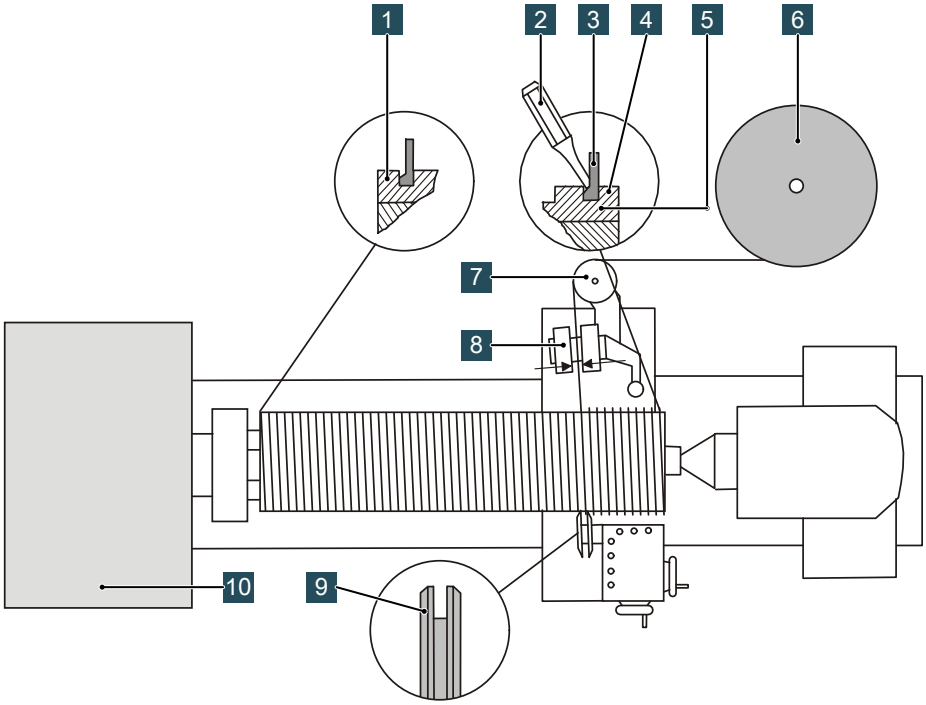

Figure 81: Opening roller on the lathe

1	Clamping point at the end of the opening roller	2	Caulking tool
3	Clothing wire	4	Clamping point at the start of the opening roller
5	Steel shell	6	Roller with saw-tooth clothing
7	Deflection pulley	8	Braking device
9	Guide roll (diameter approximately 70 mm)	10	Lathe (seen from above)

Prerequisites Make sure that the criteria are obeyed:

- ✓ Personnel with good experience in lathe operation and in the installation of clothing are necessary.
- ✓ A lathe with a minimum height of 250 mm is to be used.
- ✓ A freshly sharpened tool is to be used.
- ✓ A hammer is to be used.
- ✓ A sharp chisel is to be used.
- ✓ A caulking tool is to be used.
- ✓ A hand-held belt polisher is to be used.
- ✓ A clothing grinding wheel is to be used.
- ✓ A round steel brush (approximately 30 mm wide, 0.3 wire, and 50 mm bristle length) is to be used.

WARNING

Sharp objects!

Risk of severe injuries because of sharp objects.

- ▶ Make sure that the work is done by approved personnel or that the work is monitored by approved personnel.
- ▶ Before the maintenance work or the repair work, put on the safety helmet, the safety gloves, and the safety shoes.
- ▶ Use the crane, the rope, and special tools (if applicable) to do the maintenance work or the repair work.
- ▶ Do not stay below the machine subassemblies that have sharp objects.
- ▶ To prevent injuries to the personnel in the downstream procedure (such as repair, waste removal), carefully wind a protection layer around the used subassemblies that have sharp objects.
- ▶ During the repair work, use chain barriers to prevent access to the work area.

Removing the Clothing of the Opening Roller

1. Do not use lubricant.

   ⇨ Fibers don't stick to the opening roller.

2. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Carefully loosen the end of the clothing at the roller end 1 and the roller start 4.
3. Make sure that the surface of the opening roller is not damaged.
4. Remove the used clothing.
   ⇨ The clothing of the opening roller is removed.

Doing the Preparation for Installing the Clothing

1. Equalize the surface of the opening roller.
2. Polish the surface of the opening roller to prevent fibers from sticking.
3. If necessary, use a freshly sharpened tool to machine the grooves to the exact dimension.
4. Refer to the figure above.
   ⇨ The arrangement of the special devices for installing the new clothing is seen.
5. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** Clamp the clothing roller 6 in a reel that is installed pivotally on a stand.
6. Install the deflection pulley 7 on the tool slide to make sure that the clothing wire 3 is correctly pulled to the braking device 8 and to the groove.
   ⇨ The braking device 8 serves to set the correct fitting tension and has 2 steel plates with bronze inserts which brake the clothing wire 3.
7. Carefully set the tension of the braking device 8.
   ⇨ The clothing wire 3 is fully pulled into the groove root.
   ⇨ The clothing wire 3 will not break from too much tension.
8. Clamp the guide roll 9 in the tool holder of the lathe 10.
   ⇨ The guide roll 9 moves with moderate pressure along the steel shell 5 of the opening roller.
   ⇨ The clothing wire moves in the slot of the opening roller.
   ⇨ The preparation for installing the clothing is done.

Installing the Clothing of the Opening Roller

1. **WARNING! Sharp objects! Risk of severe injuries because of sharp objects.** At the beginning of the groove, use a hammer to tap on the clothing at the point 4 over a length of 200 mm.
2. Use a sharp chisel to chisel off 6 to 7 teeth.
3. On the internal side of the opening roller, use a caulking tool to caulk the clothing wire 3 over the full circumstance of the opening roller.

4. Start the installation of the clothing.
5. Monitor the braking device 8 and the guide roll 9.
6. If necessary, adjust the tension of the braking device 8 and the pressure of the guide roll 9.
7. Make sure that the infeed of the lathe 10 accurately matches the pitch of the grooves.
8. At the end of the groove, turn off the lathe 10.
9. Use a caulking tool 2 to caulk the clothing wire 3 over a length of 200 mm.
10. Use a hammer to tap on the clothing at the point 1 over a length of 100 mm.
11. Chisel off the last 6 to 7 teeth.
12. Cut off the clothing wire.
13. Install the clothing wire in the same procedure in all the grooves.
14. To prevent fiber sticking, use the hand-held belt polisher to polish the points at which the teeth are chiseled off.
15. Use a clothing grinding wheel to grind the tips of the clothing wire.
    ⇨ The lowest tips are just touched.
    ⇨ Individual tips may remain tough.
16. Use a round steel brush to brush against the tips until the grinding marks disappear.
17. Move the round steel brush along the tips and against the tips for 4 to 5 times.
18. Determine the number of grinding in accordance with the hardness of the brush wire.
19. When grinding, do not decrease the sharpness of the clothing tips.
    ⇨ The clothing of the opening roller is installed.

Result The clothing of the opening roller is replaced.

10.3.10 Frequency Converter

This section contains the information about the repair work of the frequency converter.

A potentiometer that changes the set speed is installed at the frequency converter housing.

10.3.10.1 Replacing the Frequency Converter

Frequency converters are subject to natural aging effects. Frequency converters are to be replaced at regular intervals with spare ones, which are charged for minimum 1 hour for every 6 months.

Only approved Rieter service personnel can do the maintenance or repair service of the frequency converters.

1 frequency converter is installed above the opening roller motor on the left-side wall. 1 frequency converter is installed above the feed roller motor on the right-side wall.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

DANGER

Parts under voltage!

Death or severe injury because of electric shock

- ▶ Set the main switch to the position OFF and padlock the main switch.
- ▶ Make sure that only an approved electrician does the maintenance work or repair work at the frequency converter.
- ▶ Wait for 10 min until the frequency converter voltage becomes 0 V.
- ▶ Do NOT touch the frequency converter during the discharge time of the capacitor.

Removing the Frequency Converter

1. Loosen the screws 1 on the front cover 2.

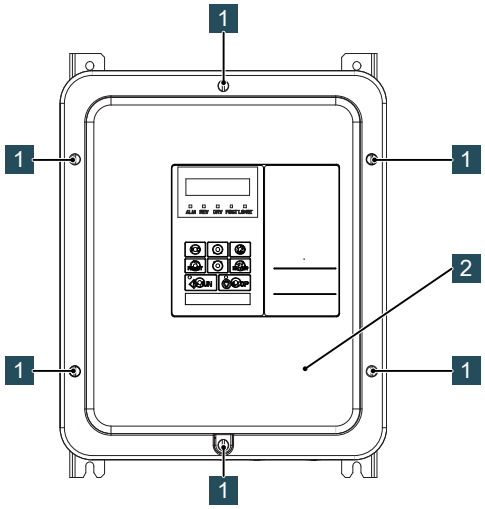

Figure 82: Front cover of the frequency converter

DANGER

Parts under voltage!

Death or severe injury because of electric shock

- ▶ Set the main switch to the position OFF and padlock the main switch.
- ▶ Make sure that only an approved electrician does the maintenance work or repair work at the frequency converter.
- ▶ Wait for 10 min until the frequency converter voltage becomes 0 V.
- ▶ Do NOT touch the frequency converter during the discharge time of the capacitor.

2. Examine if (CHARGE) LED 3 comes on.

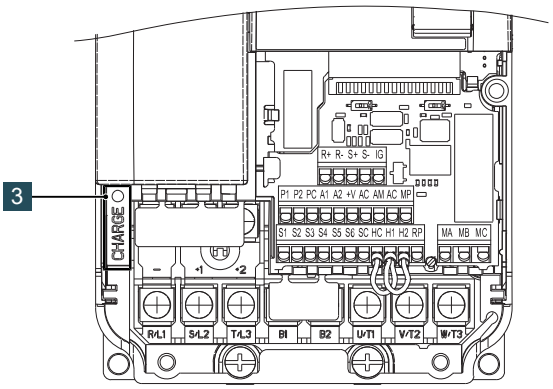

Figure 83: LED charge

⇨ The LED comes on if the voltage for the intermediate circuit is more than 50 VDC.

3. Wait until the (CHARGE) LED 3 has gone out.
4. After the (CHARGE) LED 3 has gone out, wait 5 more minutes.
5. Measure the residual voltage between the terminals with the designations (-) and (+1) (intermediate circuit).

   ⇨ If the residual voltage in the intermediate circuit has decreased below 30 VDC, the cables are possible to be disconnected.
6. To disconnect the cable 4 of the operating unit, firmly press the tab 6.

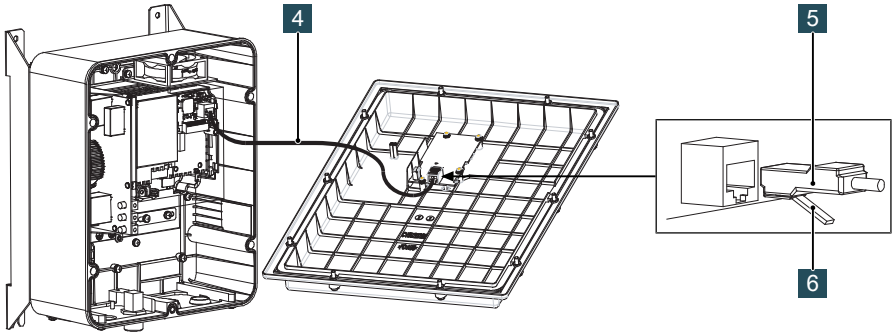

Figure 84: Cable of the operating unit

7. Pull out the plug 5.
8. Remove the front cover 2.
9. Examine the labeling of terminals and cables.
   ⇨ The cables can be correctly connected during reinstallation.
10. Disconnect the cables on the bottom plate from the terminals.
11. Remove the potentiometer.
12. Do not disassemble the protective case that encloses the drive.
13. Loosen the 4 fastening screws.
14. Remove the frequency converter.
    ⇨ The frequency converter is removed.

Installing the Frequency Converter

1. Use the recommended waterproof cable glands for all cables entering and exiting the frequency converter.
2. Use the 4 fastening screws to install the frequency converter on the side wall.
3. Connect the cables to the terminals.
4. Install the potentiometer on the bottom plate.
5. Use the connection terminals to connect the potentiometer to the frequency converter.
6. Connect the cable 4 of the operating unit to the front cover 2.
7. Use the screws to install the front cover 2.
   ⇨ The frequency converter is installed.

Result The frequency converter is replaced.

10.3.10.2 Setting the DIP Switches

3 DIP switches, S1 to S3, are on the terminal board of the frequency converter.

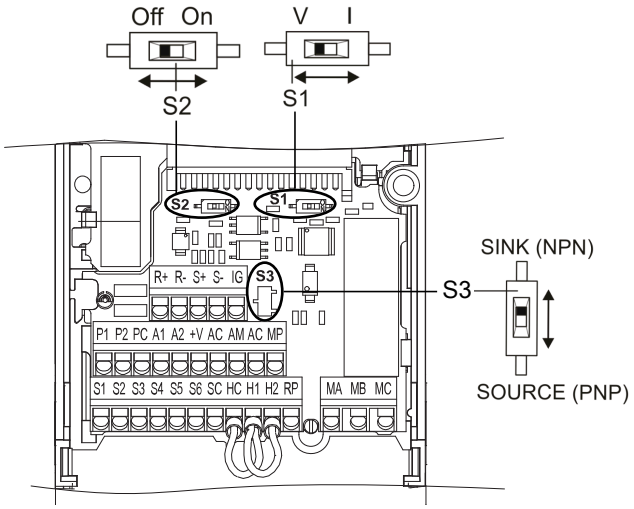

Figure 85: DIP switches of the frequency converter

Frequency Converter	S1	S2	S3
U2	V	On	SINK(NPN)
U4	V	On	SINK(NPN)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ The work is done by the plant electricians.

DANGER

Parts under voltage!

Death or severe injury because of electric shock

- ▶ Set the main switch to the position OFF and padlock the main switch.
- ▶ Make sure that only an approved electrician does the maintenance work or repair work at the frequency converter.
- ▶ Wait for 10 min until the frequency converter voltage becomes 0 V.
- ▶ Do NOT touch the frequency converter during the discharge time of the capacitor.

1. Set the switch S1 to the position V.
2. Set the switch S2 to the position On.
3. Set the switch S3 to the position SINK (NPN).

Result The DIP switches are set.

10.3.10.3 Setting the V1000 Frequency Converter

After the frequency converter is replaced, the baud rate and the node address is necessary to be set.

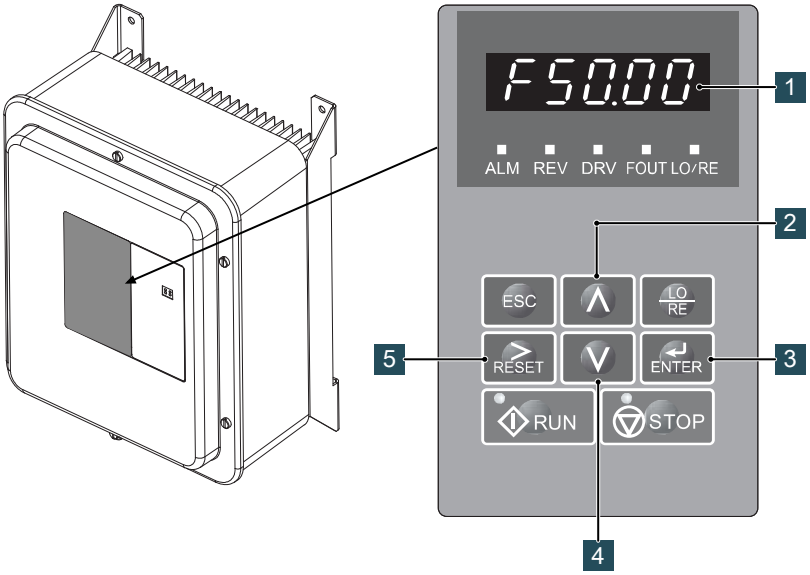

Figure 86: Keys at the frequency converter

Prerequisites Make sure that the criteria are obeyed:

- ✓ The CAN-Connector of the frequency converter is disconnected.
- ✓ The main switch is set to the position ON.
- ✓ The voltage is applied to the frequency converter.

Setting the Authorization

1. Tap the key 2 or 4 until the parameter PAr is shown on the display 1.
2. Confirm the selection with the key 3.
   ⇨ The parameter A1-01 flashes on the display 1.
3. Tap the key 3 several times until a 4-digit number is shown on the display 1.
4. Tap the key 5 to select the position of the digit.
5. Tap the key 2 or 4 to set the value 0002.
6. Confirm the selection with the key 3.
   ⇨ END lights up briefly, then the set value 0002.
   ⇨ The parameter A1-01 flashes.
   ⇨ The authorization to change all parameter values is set.

Setting the Parameters

1. Set the frequency converter parameters according to the electrical diagram.
   ⇨ The parameters are set.

Result The V1000 frequency converter is set.

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11 Decommissioning and Storage

This chapter contains information about:

- The personnel
- The temporary decommissioning of the machine
- The final decommissioning of the machine
- The storage of the machine

11.1 Decommissioning Personnel

Only Rieter-approved personnel are permitted to do the decommissioning and storage of the machine.

11.2 Measures for Decommissioning and Storage

Temporary Decommissioning

Temporary decommissioning is decommissioning only for a short time because of a shutdown. The purpose is to set the machine back into operation after the end of the shutdown.

These temporary decommissioning works are to be done:

1. Remove the fiber material from the machine.
2. Remove all operation fluids from the machine. Obey all national regulations for the storage or disposal of all operation fluids.
3. Set the main switch to the position OFF. Padlock the main switch.
4. Disconnect the compressed-air supply.
5. Let the machine temperature go down to the ambient temperature.
6. If available, remove all roller loads.
7. Remove all technology components.
8. Release the tension from the timing belts, the flat belts, or the V-ribbed belts.
9. Clean the machine and all technology components correctly. Prevent corrosion and impurities at the machine and all technology components.

Final Decommissioning

The purpose of a final decommissioning is to prepare the machine:

- For storage for a longer period
- For transport to a different location
- For disposal

This work for the final decommissioning is to be completed:

1. Remove the fiber material from the machine.

2. If available, remove all roller loads.
3. Remove all technology components.
4. Remove all operation fluids from the machine. Obey all national regulations for the storage or the disposal of all operation fluids.
5. Set the main switch to the position OFF. Padlock the main switch.
6. Disconnect the compressed-air supply.
7. Disconnect the power supply to the machine.
8. Let the machine temperature go down to the ambient temperature.
9. Release the tension from the timing belts, the flat belts, or the V-ribbed belts.
10. If the machine is prepared for storage, clean the machine and all technology components correctly. Prevent corrosion and impurities at the machine and all technology components.
11. Disassemble the machine into units that stay in a safe condition during transport.
12. Use the original transport locks and the original packaging materials. Obey all transport regulations. *Packaging and Transportation ▸ 47*

Storage

1. Keep the machine in a clean and dry room. Put the machine and the machine parts on a flat surface. Identify the machine with an identification mark.
2. Do not let unauthorized personnel go into the storage room.

12 Disposal of the Machine

This chapter contains information about the disposal of the machine after the end of its service life.

The machine owner is responsible for the correct disposal of the machine.

The instructions in the chapters that follow are to be obeyed:

- Safety
- Packaging and Transportation
- Decommissioning and Storage

The national regulations for the disposal of the machine and all operation fluids, batteries, and packaging materials are to be obeyed.

Disposal includes:

- Reusability
- Recycling
- Disposal of waste

The materials are to be divided in relation to the material group. The materials are to be given to the correct collection point:

- Steel
- Copper
- Brass
- Rubber
- Electronic waste
- Cast iron
- Glass
- Plastics
- Liquid materials
- Dangerous waste

The machine manufacturer Rieter is to be told about the disposal of the machine.

E-mail: info@rieter.com

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13 Appendix

This chapter contains information about:

- Standard tightening torques
- Tools and gauges

13.1 Standard Tightening Torques

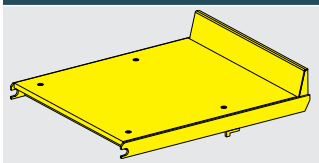
Screw Dimension	Strength Class	Tightening Torque [N•m]	Clamping Force [kN]
M4	4.8 (welding stud)	1.5	--
Friction coefficient	8.8	3.1	3.9
4G = 0.14	10.9	4.5	5.7
	12.9	5.3	6.7
M5	4.8 (welding stud)	3.0	--
	8.8	6.1	6.4
	10.9	8.9	9.3
	12.9	10.4	10.9
M6	4.8 (welding stud)	5.0	--
	8.8	10.4	9.0
	10.9	15.5	13.2
	12.9	18.0	15.4
M8	4.8 (welding stud)	13.0	--
	8.8	25.0	16.5
	10.9	37.0	24.2
	12.9	43.0	28.5
M10	4.8 (welding stud)	25.0	--
	8.8	51.0	26.0
	10.9	75.0	38.5
	12.9	87.0	45.0
M12	8.8	87.0	38.5
	10.9	130.0	56.0
	12.9	150.0	66.0
M14	8.8	100.0	52.6
	10.9	146.0	77.2
	12.9	171.0	90.4
M16	8.8	215.0	72.0
	10.9	310.0	106.0

Screw Dimension	Strength Class	Tightening Torque [N•m]	Clamping Force [kN]
	12.9	370.0	124.0
M20	8.8	430.0	117.0
	10.9	620.0	166.0
	12.9	720.0	194.0
M24	8.8	740.0	168.0
	10.9	1080.0	239.0
	12.9	1240.0	280.0

13.2 Tools and Gauges

This chapter contains the Rieter-specific tools and gauges for:

- The transport of the machine
- The installation of the machine
- The maintenance of the machine
- The repair of the machine

Tool	Tool Name	Function Description
	Installation board	The installation board is used to move out the opening roller and move in the opening roller.

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